



Omdia Market Radar: Customer Engagement Solution for CSPs, 2020–21

Enabling CSPs to personalize customer engagements

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Summary

Catalyst

Personalizing customer experience remains a key objective for communications service providers (CSPs), particularly for the benefits it will bring in driving growth for 5G and increasing customer retention. To meet this objective, CSPs need to engage effectively with customers throughout every journey, delivering relevant, timely, and consistent communications irrespective of the channel in use. In addition, they need to maintain the context of engagements with customers as they move between channels when performing any task like ordering a product/service or reporting an issue.

This is a complex challenge, particularly for an industry where customers consume multiple services, with each service being managed by separate teams/lines of business operating in silos and engaging via a broad range of channels. Consequently, CSPs can't meet the demands for a seamless customer experience as they have no single view of the customer across channels and business functions; their preferences, what actions they have taken or plan to take and so on. Without this unified view of the customer, customer interactions become difficult to influence in a way that benefits both the customer and the CSP.

To tackle these challenges CSPs are investing in customer engagement solutions to provide a unified view of the customer and the ability to orchestrate the experience across any customer journey, channel or department with which the customer might interact. There are several ways to achieve this solution, including integrating several products from multiple vendors or investing in a single platform, which Omdia refers to Customer Engagement Platform (CEP). The CEP takes an integrated platform approach to achieve the functions of a customer engagement solution for multiple customer facing functions. Omdia sees the platform approach as being most effective as it enables a CSP to meet the more complex demands of omnichannel customer engagement, that spans activities across its value chain via a single platform. Several leading vendors with a deep CRM heritage are evolving their applications into customer engagement platforms.

This report assesses the customer engagement solutions used within the telco industry to support multiple business operations, with a view to provide a comparative analysis focused on capabilities and technologies, execution of strategy, and market impact.

Omdia view

To engage effectively with customers, CSPs require a customer engagement solution that unifies engagements across the value chain involved in customer interactions. This solution needs to:

- Identify the customer through a unique and dynamic profile which draws on first-party interactions and transactional data, augmented with second- and third-party data,
- Intelligently orchestrate the engagement through a combination of rules-based and AI based automation (triggered by real-time insights obtained during the customer's interaction journey) and processes occurring throughout all journeys.
- Integrate seamlessly with frontend and backend systems to retrieve relevant information to support all forms of engagement.

- Build trust with the customer by ensuring data security and permission-based use of that data.
- Continuously adapt to meet ever-growing customer expectations and behavioral changes.

A customer engagement solution should therefore include a set of product offerings (delivered as a set of systems integrated to meet customer engagement requirements or as an integrated platform) and services that enable a CSP to achieve these capabilities. These functions can be achieved by coordinating and orchestrating customer engagement activities for single or multiple departments such as sales, marketing, and service. Interactions with customers is to be coordinated in such a way as to deliver mutually beneficial set of outcomes—superior customer experience, improved retention, greater customer lifetime value and more profitable revenue.

Omdia recognizes that most CSPs have invested in several systems to meet their customer engagement requirements. However, with a need to deliver personalized experiences to their customers, piecemeal approaches are inadequate. A customer engagement platform approach (where the key functionalities are interconnected and supported by standard telco data models and business processes) is required to provide an optimal approach to meeting this objective.

First, it enables a centralized view and orchestration of functions required to drive personalized engagements across channels. Secondly, as engagement channels evolve, particularly with internet of things (IoT) presenting a myriad set of channels of engagement, CSPs will need to adopt a simplified and agile approach to embedding these new channels into their overall engagement ecosystem. The platform approach enables this capability as the new channels mainly need to adopt the data models, processes and make calls through APIs to key engagement functions within the platform already used by pre-existing channels. In addition, the CEP approach enables quicker implementation of changes to the overall solution, instead of time required in making changes to individual channels when a strategy change occurs or regulatory measures kick in.

While a CEP should meet the full requirements for consistent and seamless customer engagements, the reality is that existing customer engagement solutions do not currently address all requirements. Omdia has assessed the solutions from six of the key vendors in this space; Amdocs, Microsoft, Netcracker, Nokia, Oracle, and SAP. These solutions provide most of the capabilities that a CEP would provide either directly or through a partner. Those with a cross-industry coverage are using their cross-industry experience and best practices to help CSPs evolve their engagement capabilities. These vendors are also taking advantage of big data, analytics, artificial intelligence (AI), automation (including the use of chatbots), the cloud and their telecoms business process experience and expertise to develop a compelling customer engagement solution offer to CSPs. The objective of these vendors and others targeting the telco customer engagement market is to fulfil the requirements of a CEP which supports engagements across the CSP's value chain. It is only then that their CSP customers can achieve their personalized customer experience objectives, consistently.

Key messages

- Customer engagement solutions play a critical role in meeting CSPs' personalization objectives and they can be deployed either as a set of integrated systems or a single integrated platform providing the eight key capabilities needed to deliver effective customer engagement.

- A customer engagement platform strategy provides a more efficient approach to developing and extending CSPs' customer engagement capabilities.
- Two categories of vendor offerings sold to CSPs exist for customer engagement solutions: customer engagement solutions supporting a single business operation like marketing, sales or care and a second category including solutions supporting engagements for multiple operations
- Amdocs, Microsoft, Netcracker, Oracle, and SAP take the customer engagement platform approach as it fosters the interconnectivity between backend and frontend systems and orchestration of engagements across channels.
- Nokia customer engagement solution does not take the platform approach. The vendor however provides unique offerings that support the market's requirements for personalized customer engagement.

Recommendations

Recommendations for CSPs

CSPs must prioritize investment in customer engagement solutions that meet today's demands for omnichannel customer experience. The global pandemic places huge pressure on CSPs to make this transformation as quickly as possible as customer interactions on digital channels increases. While budgets may not be available to make full blown transformations to the entire customer engagement stack, CSPs can take a stepwise approach.

- **Change engagements from a product centric to customer centric orientation.** This approach can create a unified environment designed for the customer and focused on addressing pain-points customers face as they engage with CSPs on all channels.
- **Transform business processes before moving on to technologies;** Identify common customer journeys and work backwards to define processes that support them. Consider the changes to be made to existing business processes (digital and non-digital) to resolve pain-points and meet customer expectations. Identify those that can be implemented in the short term and those for the long term. CSPs should also consider technology capabilities that will support changes across both phases of this transformation plan.
- **Transform technology landscape:** CSP transformation strategy should evolve the customer engagement landscape to align with the customer engagement platform proposition.

Recommendations for vendors

Vendors have a role in ensuring CSPs transform customer engagement solutions in a “painless way.” It is obviously a big challenge transforming from their legacy and siloed customer engagement solution to that which is dynamic and enables them to engage with customers in a more personalized way. Legacy infrastructure and processes will be the biggest barrier to making this change. It is therefore important that you lead engagements with CSPs bearing in mind the following:

- **Take a more consultative approach with your go-to-market strategy:** Utilize your experience working with other CSPs and clients from other industries to help CSP prospects chart a path

to transform business processes that meet their customer engagement and experience ambitions. Lead discussions on frameworks and key learnings from past deployments to strengthen your go to market strategy.

- **Go with a cost-effective solution:** Bear in mind, budgets are tight. CSPs can't afford a complete overhaul of what they currently have. However, they need an agile solution that takes them from current solutions to a customer engagement platform as the end-product, including the eight attributes included in this report. Vendor solutions should also seamlessly integrate with legacy systems. This approach needs to consider the role cloud will play in scaling the solution to address the changes and uncertainties created by the pandemic.

Defining and exploring customer engagement solutions for telecoms

Definition and characteristics

A customer engagement solution (CES) includes a set of product offerings and services that enable a CSP to coordinate and orchestrate customer engagement activities for departments such as sales, marketing, and service. Interactions with customers is coordinated in such a way as to deliver mutually beneficial set of outcomes – superior customer experience, improved retention, greater customer lifetime value and more profitable revenue. The CES would enable delivery of consistent and relevant interactions between CSPs and their customers across a broad set of channels (digital and non-digital, assisted or unassisted) throughout the customer lifecycle. This solution is particularly critical as the impact of the global pandemic forces CSPs to transform from legacy interaction channels like retail shop to digital channels.

Customer engagement solutions can support single business operations like marketing (as in the case of Comviva and Flytxt) or a combination of business operations (as in the case of Amdocs, Microsoft, Netcracker, Nokia, Oracle and SAP).

Customer engagement solutions vs Customer Engagement Platforms

Customer engagement solutions could be delivered as a set of systems integrated to meet customer engagement requirements or as an integrated platform. For customer engagement solution offerings that support multiple business operations, via a single integrated platform, they meet Omdia's definition of a Customer Engagement Platform (CEP).

Omdia defines a CEP as a platform that enables a CSP to coordinate and intelligently orchestrate all customer engagement activities across its value chain via a single platform. CEP provides its functions in a way that delivers a symbiotic set of outcomes: superior experience for customers and profitable growth, improved operational efficiency, and lower costs for CSPs.

A CEP provides a centralized view and orchestration of the customer, their journey, and engagement with multiple customer-facing functions across all channels. As engagement channels evolve, CSPs

can utilize the CEP approach to embed new channels into their overall engagement ecosystem and still meet their omnichannel customer experience objectives.

Key capabilities of customer engagement solutions

CES for telecoms could cover a subset or all of the following capabilities, depending on the scope of functions they support.

- Provide a unified view of all customer data—transactional and contextual, often in real time. This customer data would sit within systems, such as CRM, billing, and customer care systems.
- An integrated view of all channel traffic—online and offline (inbound and outbound)—which provides complete visibility into each customer interaction journey as it happens, or for offline interactions, once they are recorded.
- Supported by end-to-end processes designed to give CSP employees visibility and, collaboration and facilitate timely and contextually relevant response.
- Based on real-time insights and inferred intent, derived from embedded intelligence and machine learning.

The eight layers of a customer engagement solution

The customer engagement solutions for telecoms covered in this report consist of tools within the eight layered architecture included in Figure 1.

Figure 1: The eight layers of a customer engagement solution

Layer	Core elements	Building blocks
Orchestration layer	Real-time dynamic experience orchestration and outcome management	Data, context intelligence, triggers, and automation provided by supporting layers
Supporting layers	Functional support for front line: marketing, sales, service, commerce and subscription billing, and extensions	Functional modules, third-party add-ins, microservices extensions, mixed reality
	Industry-specific versions – templates, data models, processes, UX, business rules, and related third-party extensions	Industry-focused functional support
	Enterprise content and digital asset management tools	ICMS, DAM
	Customer interaction intelligence and automation tools	Connected ML, NLP, automated workflows, RPA, customer journey analytics, IoT sensors
	Security, compliance, and permission-based mechanisms and access controls	Security and compliance policies and customer data redaction support on need-to-know basis, blockchain
	Unified customer data management and dynamic profiling	Real-time big data and streaming technologies, enterprise-customer data platform, in-memory, edge, DaaS
	Cloud Infrastructure – IaaS, PaaS, SaaS, CPaaS, and integration via APIs to back-office, third-party applications, third-party data sources	Core cloud infrastructure and communications network access

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Source: Omdia

This architecture aligns with the key features defined by Omdia for a CEP. The CEP approach includes these functionalities as interconnected functions, supported by standard telco data models and business processes.

It should be noted that vendors offering customer engagement solutions may provide tools in these eight layers either directly or through partners to deliver some of these capabilities. However, providing these capabilities as an integrated platform (as in the case of a CEP) brings advantages to speed of transformation.

Defining the eight layers in a customer engagement solution

Realtime customer engagement orchestration and outcome management layer

This layer connects all interactions and data, as well as delivers personalized content through every touchpoint and channel. In B2C environments, this is often related to interactions with an individual consumer, whereas in B2B environments, it involves a decision-making unit comprising different individuals and roles throughout the buying cycle, sometimes over many months, may be involved.

Functional support layer

For a CES to be effective, it must provide functional support for at least two customer-facing business units, ideally marketing, sales, order management, and service – to support renewals and subscriptions, including products as a service.

Integration layer

The integration layer includes APIs and other capabilities employed by the customer engagement solution to provide interconnection between the customer engagement solution and the back- and front-end systems.

Enterprise content and Digital asset management (DAM) systems

Content is critical to every customer engagement. It is therefore important that customer engagement solutions can easily obtain content to support engagements when required. Content and digital asset management systems or tools are developed to store, share, and organize content and digital assets within a central location, thereby facilitating engagements with customers.

Unified customer data management layer

The unified customer data management layer combines first- and third-party data sources often collected by marketing in data management platform (DMPs), as well as big data and emerging data sources like the Internet of Things (IoT). It can also include data volunteered by the customer (for example preferred method of engagement). The unified customer data platform (CDP) monitors and synthesizes the data to create unified customer profiles. In addition, indication of customer intents and preferences can also be identified.

Security and compliance layer

This layer provides the security measures and business tools necessary to protect sensitive customer data across multiple tenant environments and minimize the risk of fraud to a brand.

Interaction intelligence and process automation tools layer

This layer includes intelligent tools (predictive and behavioral analytics, machine learning, robotic process automation (RPA), etc.) aimed at analyzing, predicting, and contextualizing the customer data generated throughout the customer journey and triggering the most relevant response.

Cloud infrastructure

Given the speed of change, a cloud-based platform provides the optimum environment for customer engagement systems. This may be a combination of software-as-a-service (SaaS) and platform-as-a-service (PaaS) and owned by the vendor or run on a third-party infrastructure-as-a-service (IaaS) platform provider. The ability to integrate with existing enterprise applications (i.e., back-office and logistic systems, CRM, commerce and content, DAM systems, or third-party data sources)—typically via APIs—is also essential to enrich the customer profile data.

Business value and applications

Delivering timely, relevant and personalized interactions with CSPs' customers is the key value a customer engagement solution brings to CSPs. There are multiple use cases where these solutions can bring this value to organizations within the CSP, including targeted and personalized marketing,

upsell and cross-sell of services, customer loyalty campaigns, and in delivering proactive care. Table 1 in the appendix provides more information on these use cases.

Better engagement leads to improved customer experience and business performance

There are both operational and business benefits to implementing customer engagement solutions. Figure 2 summarizes the operational benefits.

Figure 2: Benefits of customer engagement solutions to CSPs



Source: Omdia

Customers aren't the only benefactors of customer engagement solutions. Employees also get to improve productivity levels and target their role to pleasing customers as they interact with them. By utilizing a centralized view on customers, they are informed on all interactions the customer has made with other parts of the business and likely pain-points and can respond to customer questions in a more efficient way.

From a business perspective, by implementing these use cases CSPs can improve conversion rates, reduce churn, and drive increased revenues. Examples of CSPs reaping rewards from their customer engagement solutions include EE and T-Mobile US. EE for example engaged Pega Systems to improve how they engage with customers. Pega Systems deployed a customer engagement solution provider indicated that EE saw a 40% reduction in churn and a 300% increase in sales offer acceptance following the CSP's implementation of the vendor's Customer Decision Hub (CDH). Pega CDH is a customer engagement solution that combines data management, decision management, and predictive analytics to drive effective and personalized engagements with customers.

Market landscape and participants

Market origin and dynamics

Tools enabling customer engagement were provided by traditional CRM platforms. However, as the demand for personalized customer experience increased, it's become increasingly challenging for CRM platforms to meet customer engagement requirements.

Customers now expect the same experiences they get when consuming services from internet content providers (ICPs) like Amazon, Google, and Netflix. They expect CSPs to recognize who they are, their needs and respond quickly to these needs. They also expect a seamless experience throughout their journeys, being able to move between channels with the context of previous interactions visible to employees and other channels.

How CSPs engage with customers plays a key role in delivering improved and personalized customer experience. Engagements need to become dynamic, relevant, and timely. For CSPs to achieve these capabilities and engage effectively with customers, CSPs' customer engagement solutions must possess:

- Complete 360-degree view of customers at every touchpoint along the customer journey.
- The intelligence to determine customers' needs or intent at every stage of their journey (irrespective of the channel they choose to engage in with the CSP), and to be able to assess opportunities or risks associated with this identified intent, in context.
- Real-time decisioning capabilities to identify the next-best actions to take to either seize the opportunity (e.g., send an offer to drive up spend), or avert risk (e.g., churn).
- The ability to assess the impact of actions taken on the overall customer journey to ensure that business objectives are achieved.

Traditional CRM systems alone can't fulfil these customer engagement requirements, as they are designed to manage the intensive data work needed to efficiently manage and organize customer interactions but not influence them in a way that enables CSPs meet customer expectations.

To personalize customer experience effectively, traditional customer engagement solutions need to change from siloed systems managing interactions within specific channels and services to solutions that consolidate and orchestrate a CSP's customer interactions across all customer-facing functions.

Key trends in the customer engagement solution for CSPs market

Solutions included in this market radar are evolving to meet CSPs' requirements to deliver personalized customer experience. Some of the vendors providing these solutions have a marketing, customer service, sales, or CRM background and are building in additional capabilities to enable CSPs deliver relevant engagement to customers.

The majority have taken advantage of their deep pockets to buy in the required capabilities. Amdocs acquired Brite:Bill and UXP systems, SAP acquired Hybris, Gigya, and CallidusCloud, and Nokia acquired CompTel. Oracle's portfolio is a broad collection of assets from acquisitions like BlueKai, CloudTwist, DataFox, Moat, and Maxymiser.

Others are relying on partners to provide joint solutions, which are then included as part of their portfolio. Nokia for example partners with Salesforce, combining Salesforce's CRM capabilities with the vendor's network and customer care functions. There are others that have decided to build capabilities using in-house development teams, for example Netcracker.

Most solutions assessed comprise a suite of channel applications, a customer data management (CDM) system from which a customer profile specific to each customer can be generated and tracked continuously in real time to identify moments when engagements present potential risks or opportunities (in line with the business objectives). Customer journeys are split into different journeys such as the search, buy, use, pay, help, and change journeys which are then tracked. Through a centralized orchestration engine or capability, critical moments within these journeys are captured, assessed and the right response identified (next best offer, or response to customer that is relevant to the context of the engagement at that moment). Responses are delivered to the customer on the channel that best meets the customers' need at that moment. Other capabilities such as consent management, device and service management are also being included in the solution to provide capabilities that support every customer interaction.

There's the concept of digital experience layer (DEL) which is being adopted by several vendors to enable CSPs to improve digital customer experience despite limited budgets and the barriers caused by legacy systems. It encapsulates customer journey and engagement orchestration functions to enable CSPs capitalize on every interaction to reduce churn and drive new revenue opportunities. In the typical DEL architecture, the solution is deployed as an overlay on top of the CSP's existing legacy platforms. This enables CSPs to modernize and transform their customer facing IT capabilities without touching the existing platform. It also means that CSPs can transform legacy systems at their own pace.

Future market development

Vendors will invest in new features and services capabilities that enable agile and intelligent customer engagement solutions. With the closure of retail stores, most customer interactions have moved to digital channels. Implementing self-service, intelligence and automation capabilities within mobile apps and other digital channels will become a key focus for CSPs.

Given the short timelines and limited budget to implement these capabilities, deploying a customer engagement platform may not be feasible in the short term. CSPs are demanding solutions that can easily extend support to new channels with limited cost implications. They are also requesting solutions that can co-exist with legacy IT systems while providing them the agility and scale to respond to customer needs via engagement channels. While the CEP presents a strong option, the move towards implementing a CEP will be a more long-term plan.

In response to these demands, vendors will focus on enhancing the self-service capabilities within existing channels. In addition, they plan to extend the portfolio of engagement channels they currently support. They will also invest in building and strengthening the customer data repository and to make this information available across every touch point in the customer journey. Most vendors aim to utilize the learning capabilities of AI technologies to quickly understand the customer context and based on this insight, craft the right response or engagement with the customers. Amdocs for example plans to utilize AI to achieve pattern recognition and visualization of customer

behaviors on all channels and use the insights to drive business decisions. For example, using NLP based customer and product analytics to trigger offers targeted at customers.

Solving the interoperability challenge using standard and open APIs will facilitate customer engagement. CSPs and vendor partners are fast adopting TM Forum Open APIs and other API initiatives to integrate CSP legacy systems of record with the systems or channels of engagement.

The cloud will play an important role in simplifying the way CSPs engage with customers. In addition to addressing the uncertainties caused by the pandemic, vendors plan to leverage the cloud and cloud related technologies to provide an agile and unified platform for customer engagement. It also provides the opportunity to utilize a single data model to support all interactions across channels and systems with a view to ensuring consistency and continuity of communications on these channels.

Vendor landscape for customer engagement solutions for CSPs

The vendor landscape for customer engagement solutions consists of two categories of vendors; the first set of players include vendors providing customer engagement solutions limited to one customer facing operations domain, for example, marketing, e-commerce, sales, and service, the second category of vendors provide customer engagement solutions that support multiple business operations. Some of the vendors from this second category of vendors were profiled in our study.

Customer engagement solutions supporting single business functions

These vendors have not been assessed in this research as their solutions do not meet the set criteria for the research. We've however included some of these vendors to provide insights on the capabilities they bring to driving customer engagement. They may be considered as potential vendor partners to CSPs or partners to vendors delivering customer engagement solutions focused on supporting specific customer facing operations.

Comviva

New Delhi, India based company, Comviva (formerly Mahindra Comviva) is focused on helping enterprises, including CSPs to enhance their customers' lifetime value. The vendor provides platforms and services that enable CSPs to leverage and influence micro-moments (coined by Google which recognizes the shifting behavior of customers as a consequence of mobile device ubiquity and the need for enterprises to take action on whether to make a customer an offer and determine the offer to target within sub seconds) of customer interactions to deliver the right offer in real-time across various touchpoints, including outbound digital and legacy channels, retail PoS, self-care apps and CRM platforms.

Aligning with the idea of monetizing micro-moments, the vendor revamped its MobilYtix customer engagement offering for CSPs and DSPs to increase the lifetime value of their customers through direct customer engagement. It is a real time marketing automation and analytics solution which uses machine learning to support decisions on whether an offer should be sent to a customer. This decision is based on the context of the interaction with the customer (inbound or outbound), what offer should to be delivered, and how to deliver the offer in an optimal way that would generate maximum returns to the CSP. There are three building blocks associated with MobilYtix

- **Behavioral DNA (BDNA).** Also known as customer 360-degree profile, basically includes features that represents a customer. For Comviva's telco market, Comviva provides a BDNA

dictionary of about 1,600 features that represent the customer. The BDNA forms the core of the MobiLytx product and is modeled by ingesting customer data from different sources in batch or real-time, including clickstream, transactional, behavioral, or social data.

- **AI modeling / analytics platform.** Enriches the BDNA with analytical insights, for example, propensity scores (churn propensity, propensity to be upsold, propensity to be a multi SIM user or propensity to respond on a channel), scores from an in-built Offer Recommendation Engine (NBO) predicting the likelihood of an offer to result in a particular behavior (increase in revenue, increase in the lifetime value of the customer or uptake of a service). The AI Workbench allows the user to model a pipeline workflow by using drag and drop features included with the AI Workbench.
- **Real-time decisioning.** Runs on an in-memory database which utilizes the rich customer profile and real time events to make decisions on whether to target the customer with an offer and, if so, which offer to target the customer with, as well as managing (or orchestrating) the interaction with the customer. Connected to the real time decisioning engine is the channel service layer which receives and delivers communications to customers, manages integration with the offer fulfilment components, other APIs and other third-party applications. A key feature of the real time decisioning component is the Inbound Request Manager. It listens to inbound channels for customer actions that may require an offer to be made to the customer. For example, someone going to a CSP's self-care app. In this case, the Inbound Request Manager identifies this action and looks out for relevant offers to present to the customer at that point in time.

Comviva's MobiLytx solution has been developed to maximize interactions with customers on both digital and non-digital channels with a view to ensure that customers receive personalized communications and for CSPs to maximize every form of engagement with the customer.

Within telecoms, Comviva has created three variants of its MobiLytx offering and these include MobiLytx Consumer CVM (to increase customer lifetime value by monetizing real time interactions), MobiLytx Retail CVM (to enable CSPs' sales and distribution arms to serve as partners driving revenue growth through contextual and personalized engagements with customers) and Mobile Money CVM (to increase adoption and use of Mobile Money services).

Comviva also provides managed marketing operations and data science services wherein the expertise of experienced CVM and data science professionals are made available to CSPs to help them extract more value from the solution that has been deployed.

Evolving Systems

Evolving Systems commenced operations over 20 years ago as provider of SIM activation technology, dynamically allocating and managing numbers on SIM cards. The last four to five years has however seen the vendor extend its offerings to include customer engagement solutions. Acquisitions have formed the core of this transition and has led to the creation of the vendor's digital customer engagement platform, Evolution.

Evolution has been developed to enable marketing and customer value management experts to drive digital engagement programs that deliver relevant communications and incentives to customers for the purpose of rewarding loyalty and driving up usage and spend. Evolution functions based on the philosophy that using a large volume of contextual and granular data obtained and processed in real time, enables the decision to automatically display the right offer to a customer based on their

current context. The results generated includes better response rates, reduced churn, incremental revenue, and improved net promoter scores

In implementing this view, Evolution functions by integrating with multiple information data sources including CRM, charging and billing systems as well as big data environments in order to build up an enriched marketing customer profile. The customer profile is combined with the vendor's configurable product catalogue, which holds information on available stock of goods and services. It also allows marketers to configure rules to govern the delivery and display of offers on engagement channels as part of campaigns, promotions and loyalty programs. It then leverages machine learning techniques to derive insights from these activities to determine the next best offer for a customer.

With this approach the platform maximizes the properties of the channels and the rules being used by the customer to engage with the CSP. For example, with SMS, there's limited space to hold the offer information, however within a mobile app or a USSD menu, there's more space for multiple offers to be displayed to the customer. The customer experience can be gamified and where a contextual decision as to what to offer or reward the customer with can be made behind the scenes by Evolution.

There are a variety of use cases for this capability from next best offer decisioning on personalized price plans and bundles to a fully gamified customer rewards program. To help design the right mechanics for each CSP the vendor also provides specialist marketing services to help craft effective customer journeys and experiences.

Flytxt

Based in Amsterdam, Flytxt positions itself as a provider of intelligent marketing technology to CSPs to help them maximize value from every interaction across each one of their customers' digital journeys. Portfolio of products offered to CSPs includes NEON-dX and its AI-based offerings: Offer-X and Robo-X. Flytxt products can be deployed on private or public clouds or on-premise and can be integrated seamlessly with the CSP's CRM environment. The products combine marketing automation, advanced analytics and artificial intelligence capabilities to enhance customer engagement, increase marketing productivity and efficiency across the organization.

- **NEON-dX** is the vendor's flagship product. It is a platform that combines AI capabilities specific to marketing functions, analytics, and marketing automation capabilities to enable CSPs deliver and manage personalized outbound & inbound campaigns. It ingests customer, transaction, and third-party data, analyzes the data and utilizes insights to serve a portfolio of pre-packaged applications and add-ons running on the platform. These include its AI-based offerings Offer-X and Robo-X as well as marketing automation and digital customer engagement applications. Marketers can run a variety of inbound/outbound campaigns over traditional and digital channels out of the box with NEON-dX for customer value management.
- **Offer-X**. is powered by machine learning capabilities, Offer-X can provide insights for better optimization of offers delivered to customers. It can be sold as an add-on to the NEON-dX platform and as a separate product that can plug into any third-party marketing automation systems like Salesforce. Offer-X takes in all information relating to customer transactions (customer data, product details and available offers) from the marketing automation system. It then uses proprietary machine learning techniques to map the most suitable offer to each customer and pushes them via the marketing automation systems to engagement channels

to be offered to the customers. Offer-X takes into consideration past and real time customer behaviors and the marketer's objectives in determining what offers to send to customers. With this capability, customers receive relevant offers and CSPs gain added benefit of revenue uplift and cost optimization

- **Robo-X.** Another AI-based solution from Flytxt designed to help address challenges faced by marketers (regarding speed, scale and accuracy) while discovering, designing and optimizing micro-segmented campaigns at scale. Robo-X is designed to act as a companion for marketers that can automatically discover upsell/cross-sell/retention opportunities, design campaigns as well as continuously rate and optimize the performance of live campaigns. The focus of Robo-X is to automate marketing decisions and actions at scale.

Flytxt has already implemented its AI-based next best offer engine Offer-X with multiple customers and is currently running trials with customers to demonstrate the capabilities of Robo-X.

Flytxt's strategy to offer its AI-based solutions, Offer-X and Robo-X as separate products will be welcomed by CSPs particularly those that have invested in marketing automation but still looking to adopt AI to improve customer engagement and marketing performance. This will help CSPs to protect their current investment and maximize returns. However, there's additional services costs associated with integrating the products with pre-existing systems and the standardization of the data sets that are fed into the products.

In line with this requirement, the vendor offers services to enable CSP customers to gain the most out of their investments. These services include telecoms marketing services (which include customer data analysis and insight modeling, customer value management consulting and marketing operations and reporting). Other services include data science services (AI/ML model optimization, insight modeling services, and insight workbench operations) and technical services like solution implementation and product support as well as big data managed services.

Customer engagement solutions supporting multiple business functions

The focus of this Market Radar is on those vendors that fall within this category. Omdia assessed these vendor solutions based on their technology capabilities, strategy execution and market impact. For technology assessment, we examined the capabilities of each vendor's solution looking at seven of the eight core capabilities included in the eight-tiered CES architecture. We also looked at the portfolio of engagement channels and the integration capabilities with CSPs' backend OSS/BSS systems. For strategy we looked at several criteria such as product and business roadmap, commercial model, partner ecosystem and professional services offerings. For market impact, we assessed factors such as overall revenues and revenues from telecoms generated from the sales of each vendor's customer engagement solution, telco customer base and geographical presence of vendors.

The heatmap is colored according to the Omdia's assessment as follows:

- **Advanced capability:** The solution demonstrates cutting-edge capabilities and full alignment with Omdia's ideal.
- **Broad capability:** The solution offers better-than-expected functionality for the feature.
- **Partial capability:** The solution provides expected functionality but lacks extensive alignment with the capabilities outlined by Omdia.

Figure 3: Omdia Market Radar for Customer Engagement solutions for CSPs

	Amdocs	Microsoft	Netcracker	Nokia	Oracle	SAP
Engagement channels						
Orchestration capabilities						
Functional support						
Integrating with systems to support customer-facing functions						
Intelligence and process automation						
Security and compliance						
Customer data management						
Cloud platform						
Strategy						
Market impact						

Key	Advanced capability	Broad capability	Partial capability
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Source: Omdia

Vendors on the Omdia Market Radar in Customer Engagement Solution for CSPs

Amdocs' customer engagement solution for CSPs

Omdia view

Amdocs is a leading software and services provider to communications and media companies. Its customer engagement solution includes a broad set of capabilities developed using its key assets and experience in telco CRM and BSS domains to address the key challenges CSPs face when engaging with customers.

The Amdocs customer engagement solution takes an omni-channel, digital-first experience approach to personalize customer engagements across the entire journey. The objective is to provide CSP customers with the digital experiences they have come to enjoy when interacting with the web scale and digital service providers. The vendor's expertise is particularly evident in its ability to manage

engagements with customers consuming more than one service offering from the CSP and its partners (that is bundled offerings such as connectivity, TV, and other services).

In line with its ambitions to be the partner of choice for CSPs, Amdocs has taken a single, open, and modular platform approach to develop its customer engagement solution. With this approach, the vendor consolidates its key assets for customer engagement within a unified and interoperable platform. This platform is microservices-based to allow CSPs take a stepwise approach to transforming customer engagement capabilities (based on business priorities), whilst not impacting other engagement capabilities or business functions. For example, some CSPs may decide to transform how they engage with customers for commerce activities using self-service channels without impacting other functions like care.

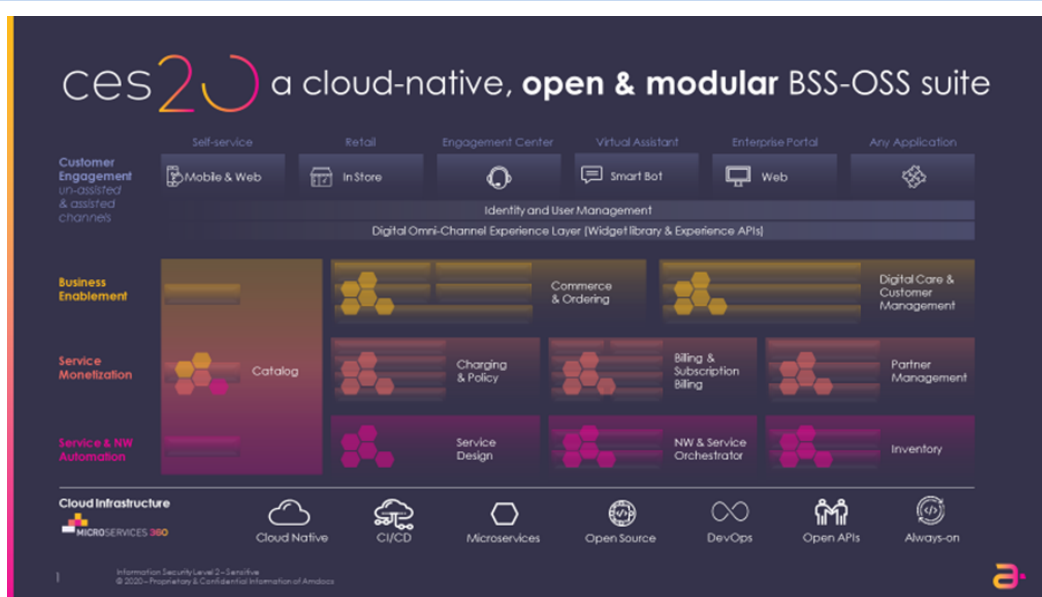
The end goal of the single platform approach is to provide the functionalities for customer engagement as reusable assets that can support new engagement channels without losing out on the consistency of communications required for effective engagement. It also offers a more cost-effective approach as it reduces the need for new system rollouts when new channels are being launched.

There are some challenges Amdocs needs to counter to remain competitive. The vendor's solution has potential gaps, for example, marketing automation and field services functions aren't native to its solution. While these gaps are not currently impacting its ability to win deals, they may potentially become a problem as vendors in these areas enhance their offerings with capabilities that facilitate customer interactions. However, by providing an open customer engagement solution, Amdocs can integrate tools from third party players to fill these gaps.

Overview of Amdocs' customer engagement solution for CSPs

Amdocs' recently launched CES20 suite (which is a cloud-native, 5G-ready, pre-integrated BSS-OSS suite) forms the foundation of the vendor's customer engagement capabilities for CSPs. Products included in Amdocs' CES20 suite include (as shown in Figure 4) Customer Engagement, Business Enablement, Service Monetization and Service & Network Automation domains.

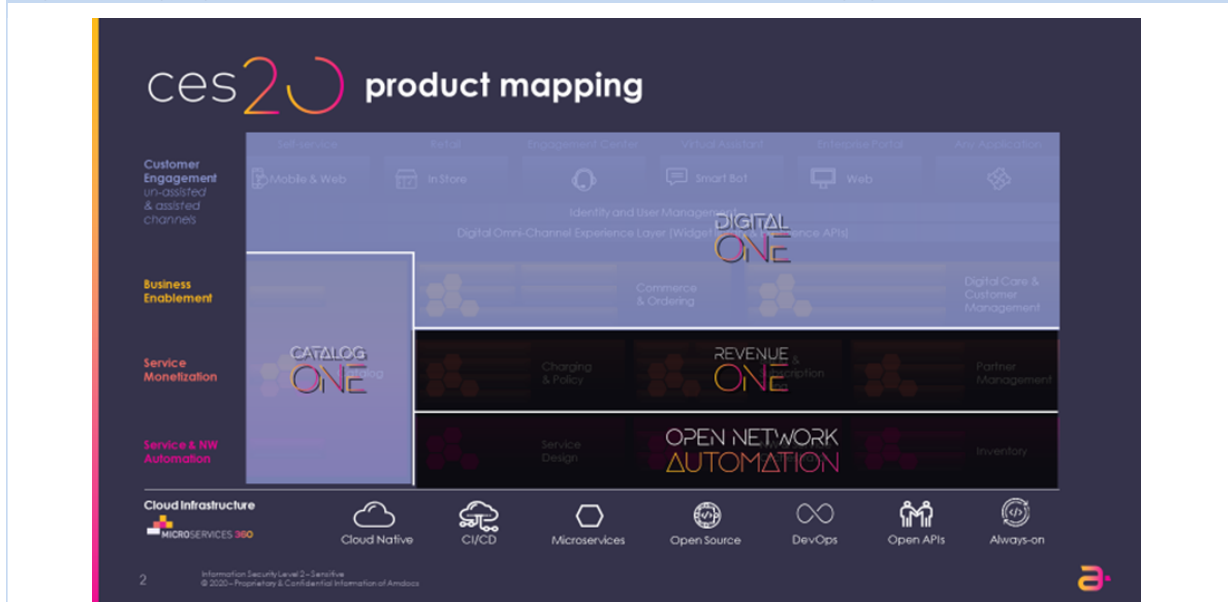
Figure 4: CES20 Suite for CSPs



Source: Amdocs

The Customer Engagement and Business Enablement domains form the core of Amdocs customer engagement solution. Figure 5 highlights the two key products included in these domains; DigitalONE and CatalogONE.

Figure 5: Highlighted products are included in Amdocs' customer engagement solution



Source: Amdocs

- **DigitalONE:** Amdocs' digital enablement product supporting commerce and care operations spanning the entire customer journey. It includes Customer Engagement applications as well as functions supporting commerce, order capture and handling and care. The customer engagement applications enable ordering of both physical and digital goods and services (across multiple lines-of-business i.e., bundles, quad-play, and beyond) across multiple channels.

DigitalONE also includes a Digital Omni-Channel Experience Layer providing channel-agnostic capabilities with a library of widgets and Experience APIs that can be consumed by all channel types (including assisted channels such as contact center and unassisted channels like self-service mobile apps). With the capabilities from Amdocs Digital Omni-channel Experience, CSPs can deliver customer experience like those provided by the web-scalers, regardless of the customer's channel of choice.

Complementing these capabilities is Amdocs' User Lifecycle Management (ULM), which provides identity & user management function for all channels and services offered directly by the CSP and indirectly via the CSPs' partners. Feeds taken from Amdocs ULM provide a multiservice view of the CSP customers, enabling the CSP to identify upsell or cross sell opportunities and to monitor user experiences based on the resulting customer profile.

With its open architecture, CES20 enables DigitalONE to integrate with third-party solutions existing within the CSP stack such as marketing automation software

- **CatalogONE:** provides capabilities for the quick creation and launch of products & services. It enables immediate launch and targeting of relevant offerings to customers and enables business users involved in the product development lifecycle to collaborate in developing

new product offers. The product pre-integrates with DigitalONE, and other products within the CES20 suite, serving as a single catalog to the entire CES20 BSS-OSS suite. Furthermore, CatalogONE can serve as a federated catalog, enabling CSPs to continue to use existing catalogs for commercial engagements with customers while abstracting the complexity and challenges of creating and presenting offers from multiple catalogs. CSPs can plan to migrate all catalogs to CatalogONE given its ability to serve as a single catalog across OSS/BSS systems.

- There are add-on products such as the Amdocs Data Intelligence add-on, which includes Amdocs DataONE and IntelligenceONE products. They come embedded within DigitalONE, CatalogONE, and other products in the CES20 suite to manage CSP data and extract actionable insights that support customer engagement and journey management. For example, Amdocs Data Intelligence provides CatalogONE a set of personalization and analytics capabilities to enable CSPs create relevant offers, pricing & promotions to customers.
 - **DataONE** is a data warehouse that serves the data needs of CSPs' engagements with customers across departments, unifying, organizing, and making accessible customer and operational data and analytical insights required to support customer engagements. DataONE is supported by Amdocs' aLDM data model, which is a pre-packaged communications-specific data model that maps multiple data sources, needed to facilitate customer interactions.
 - **IntelligenceONE** is Amdocs' analytics offering providing centralized intelligence obtained from industry-specific ML and advanced analytics to gain meaningful and actionable insights that mitigate risks such as churn and seize opportunities to monetize every customer engagement. It includes pre-packaged use cases such as Amdocs Engage and iC360 which enable CSPs to contextually manage customer lifecycle and optimize marketing and care initiatives across LoBs and channels.
- Other add-on products include Amdocs CPQ, Amdocs Digital Monetization and Amdocs Cybersecurity. The Amdocs CPQ enables sales reps to quickly configure a solution that aligns with customers' requirements, determine pricing of the different components for the solution and generate an accurate quote. Amdocs Digital Monetization includes the vendor's billing offering RevenueONE which includes real time and subscription billing capabilities required to drive good customer experience and monetize offers (including 5G services). The Amdocs Cybersecurity offering helps reduce the risk of exposure of CSPs' customer data and assets to cyber-attacks.

Products included in the Amdocs customer engagement solution are built over Amdocs Microservices360 platform which utilizes automation tools and adheres to CI/CD and DevOps operation methodologies. If required, the Amdocs Microservices360 platform can serve as a basis for co-development projects between the CSP and Amdocs development teams. It also supports deployment of these solutions to any cloud platform. Development using the Amdocs Microservices360 platform is expected to accelerate CSPs' transformation projects, while maintaining business priorities without jeopardizing ongoing operation and business.

Recent customer wins highlight Amdocs capabilities to support CSPs with delivering omnichannel experiences to customers for marketing, commerce and care functions. These customers include Orange Spain, Liberty Global, PLDT, Three Ireland, A1 Bulgaria, and T-Mobile US.

SWOT Assessment

Strengths

- **Amdocs has strong data management and analytics capabilities.** Amdocs Data Intelligence products and services capabilities are core to Amdocs customer engagement solution. Combining these assets will enable CSPs to become more agile and proactive in their engagements with customers. For the key use cases supported by Amdocs' solution—marketing, customer care and commerce—CSPs can rely on Amdocs to provide the end-to-end capabilities required to derive the intelligence necessary to support its customer engagement solution.
- **Acquired assets have strengthened Amdocs' customer engagement capabilities.** Amdocs has accelerated its ability to meet CSPs' engagements capabilities through acquired companies. Assets from these companies form the core of its customer engagement solution to telcos and include:
 - Brite:Bill (which provides solutions for personalized and digital billing experiences).
 - UXP systems (provider of user life cycle management system, ULM).

The acquisition of the ULM asset for example enables the vendor to provide CSP customers with unified experiences across channels and services provided by the CSP. As multi-service providers, CSPs require capabilities that enable them to link identities of customers across multiple services with one identity and use this identity to track all activities a customer carries out across services.

- **Partnerships strengthen Amdocs' customer engagement proposition.** Given the open nature of the CES20 suite, partner solutions can be integrated with capabilities within the suite.

Amdocs customer engagement solution comes pre-integrated with partner solutions. These solutions include Amazon Connect (for call routing), KM S lighthouse (for knowledge management to support sales and support agents), Brand Embassy, CallVU, Jacada, and Clicksoftware. To strengthen its portfolio of pre-integrated assets, Amdocs has dedicated resources who are constantly evaluating new partner solutions to complement and enhance its current capabilities.

- **Amdocs Security and Compliance capabilities encourages secure engagements with customers.** Security and governance are necessary to protect sensitive customer data. It is particularly important in multitenant cloud environments and in ensuring that CSPs align with local, and regional regulations such as EU's General Data Protection Regulation and the California Consumer Privacy Act of 2018. Amdocs provides these capabilities via security features embedded within its products, Amdocs ULM and Amdocs Engage, and its security services offering Amdocs Cyber Security.
 - Amdocs ULM for example provides user managed privacy solution to manage consent and permissions of all consumption users.
 - Amdocs Engage uses encryption to anonymize and protect subscribers' identity across multiple systems. It also goes through infiltration testing to detect any form of intrusion that may occur within the product.

Across all products, Amdocs includes built-in APIs, which can be used to comply with data retention policy, consent management, etc. A future roadmap of the vendors solutions includes the

enhancement of its privacy compliancy capabilities and the use of adaptive access management and contextual privacy and enforcement.

- **Amdocs has a strong customer base.** Amdocs has served the communication and media industry for more than 35 years. With hundreds of CSP customers worldwide, including the biggest and most successful ones—AT&T, Orange, Vodafone, and Telefonica to name a few—and with its established reputation of successfully delivering projects, Amdocs is considered a reliable partner to CSPs.

Weaknesses

- **Amdocs doesn't provide a marketing automation capability.** While marketing automation isn't native to Amdocs' offering, its solution set (particularly Amdocs Engage) can integrate with any third-party marketing automation to provide triggers or information like customer segments to facilitate marketing engagement functions. We however believe that in the future, not having a marketing automation function native to Amdocs' solution offering could potentially become a problem. Marketing automation serves key customer engagement use cases such as targeted marketing and we are seeing more marketing automation vendors enhance the customer engagement capabilities of their offerings.
- **Amdocs' solution does not natively support functions for field service customer engagement.** Capabilities such as schedule optimization and mobile support functions to enable field service agents engage effectively while interacting with customers are provided third party providers.

Opportunities

- **Recent enhancements to the Amdocs CES20 platform will facilitate development and delivery projects.** Amdocs has spent the past several years transforming its portfolio using cloud-native technologies and methodologies based on open-source technologies. It has developed modular, vendor agnostic platforms that drive compliance with telco-industry specific standards, including TMF Frameworks. Amdocs has also based its customer engagement solution capabilities on an open and modular microservices architecture to drive agility and enable automation. The vendor also adopts DevOps methodologies and best practices to provide the needed agility and IT velocity required.
- **Lockdown due to COVID-19 pandemic will drive demand for customer engagement solutions.** Given the accelerated shift to digital customer engagement due to the global lockdown, we expect increased demand for customer engagement solutions at a higher rate prior to the COVID-19 pandemic. Differentiation will therefore become critical; Amdocs has the potential to thrive in this environment and should strengthen its messaging; providing the market with insights on value delivered to other CSP customers.
- **Extend partner ecosystem to strengthen its go to market strategies.** Amdocs goes to market with a strong portfolio of partners. However, to further strengthen its engagement proposition, the vendor needs to include companies that can augment its customer engagement proposition with more capabilities. For example, partnerships with companies providing marketing automation capabilities, such as Adobe, Oracle, Flytxt, and Comviva, will strengthen its position against its peers with marketing automation capabilities.
- **Utilize its recently launched partner management platform, MarketONE to enhance its customer engagement capabilities.** Being able to get access to and pay quickly for a broad

set of services fosters engagement. The vendor's MarketONE offering (launched in October 2019) provides this capability. It is a partner management system which enables a CSP to quickly onboard, bundle, and monetize services from third-party providers such as OTT, IoT, and B2B service providers. MarketONE comes pre-integrated with Amdocs' CatalogONE and RevenueONE and can integrate with other third-party catalog and billing systems. This integration will help customers gain access to more services and pay for them on the fly. With insights on customer behavior, more offers related to services from third-party players can be targeted at customers, thereby fostering continuous engagement with customers.

- **Professional services capabilities in consulting and systems integrations provides competitive edge over vendors without these capabilities.** Amdocs business is driven by its professional services capabilities with services accounting for 95% of its overall revenues. This professional services capability enables Amdocs deliver end to end customer engagement solutions to CSPs.

Threats

- **Deal with CSPs' perception of Amdocs as a legacy vendor.** Given its long history as a telecoms focused BSS vendor, some CSPs still do not view Amdocs as a digital player. While Amdocs has spent the last several years transforming its portfolio to take advantage of digital technologies and practices, the vendor needs to do more to ensure that customer perception matches reality of their capabilities. With more customer wins and results coming from these deployments, Amdocs can convince CSPs of its expertise in areas such as cloud and cloud native practices, areas where CSPs' existing customer engagements solutions currently lag Amdocs' offering.

Microsoft CES solution for CSPs

Omdia View

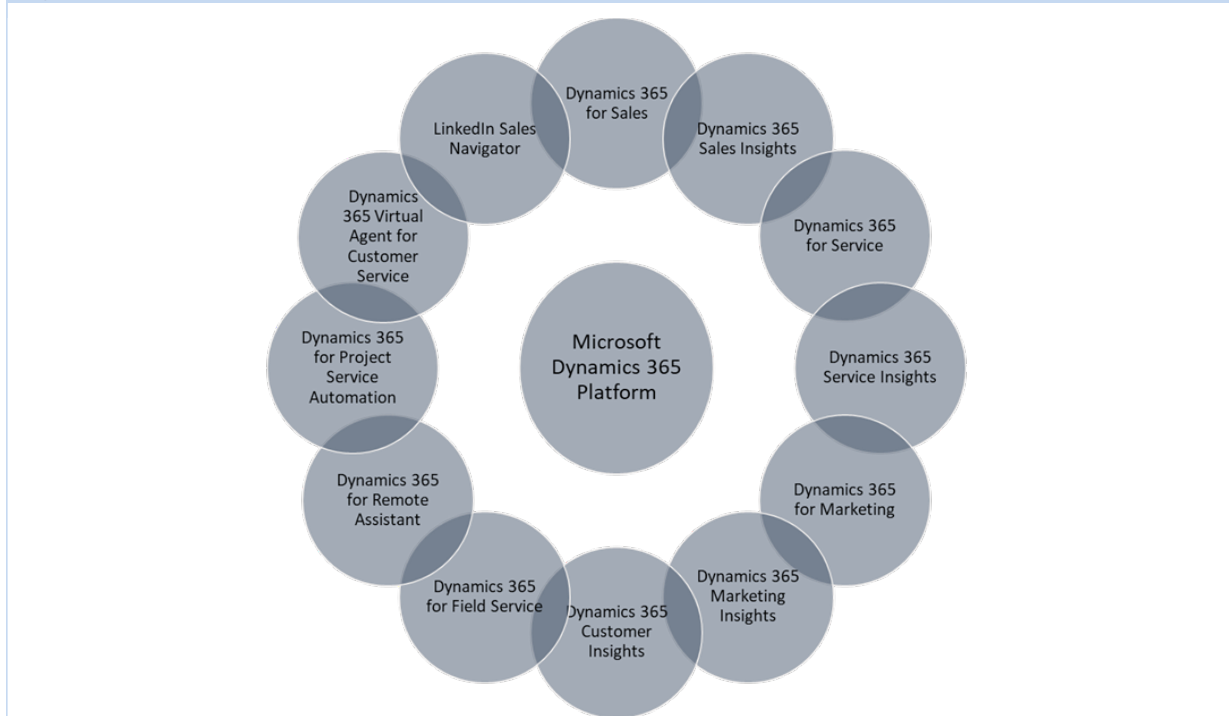
Microsoft's CES for CSPs is a comprehensive solution that delivers capabilities to enhance customer engagement and improve employees' ability to engage effectively with their customers. The core of the vendor's solution is its Microsoft Dynamics 365 platform. Applications running on this platform are interconnected to provide a holistic view of all customer interactions and facilitates the quick retrieval of insights required to deliver personalized communication with customers. Employees can leverage this insight to improve how they engage with customers. Microsoft also has a strong strategy supporting the development, sales, and delivery of the solution. Partnerships with telco ISVs providing business support systems (BSS)/operations support systems (OSS) have been critical to executing Microsoft's strategy. Recent messaging has however focused heavily on the benefits that CSPs will obtain from enhancing employees' engagement and management capabilities. This approach is plausible, however, to further strengthen its position in the CSP customer engagement solution market, Microsoft should complement its messaging with information on how its solution improves customer engagement, particularly on unassisted channels.

Overview of Microsoft's CES solution for CSPs

Microsoft's Customer Engagement solution includes its Microsoft Dynamics 365 platform, which provides the foundation required to enable CSPs to engage with their customers. It includes two plans: Microsoft Dynamics 365 for Customer Engagement (including all CRM applications) and Microsoft Dynamics 365 for Finance and Operations (for ERP and other standalone applications).

Figure 6 highlights the core applications within Microsoft's CES required to drive customer engagement.

Figure 6: Overview of Microsoft's CES for CSPs



Source: Omdia/Microsoft

The applications within the Microsoft Dynamics 365 for Customer Engagement Plan and Microsoft Dynamics 365 AI are as follows:

- **Microsoft Dynamics 365 for Customer Engagement.** Includes Dynamics 365 Sales, Customer Service, Marketing, Field Service, and Product Visualize applications.
- **Microsoft Dynamics 365 AI offerings.** These are Microsoft's pre-packaged AI applications which run on Dynamics 365. Current applications on offer include Dynamics 365 Customer Insights, Dynamics 365 Sales Insights, and Dynamics 365 Marketing Insights applications.

However, to achieve the full objective of omnichannel, personalized customer experience, all Microsoft Dynamics 365 applications, customer engagement and ERP applications, and productivity and AI tools, need to be combined and work together. Applications running within the Microsoft Dynamics 365 platform are connected enabling applications to retrieve intelligence relevant to the functionalities of the applications.

Microsoft's Customer Engagement solution (platform and applications) run on the Microsoft Cloud which unifies Microsoft's CRM and ERP capabilities along with employee productivity tools. It can also run-on third-party cloud infrastructure with functionality such as authentication and authorization being provided by the third-party cloud provider.

Utilizing a combination of Microsoft's Power BI, Power Apps, Power Flow, and Logic Apps (which are offered as add-ons to the Microsoft Customer Engagement solution), CSPs can build custom applications to meet any specific customer engagement capabilities.

In addition to providing products, the vendor also provides specialist services including consulting services (via its Microsoft Consulting Services offering) and end to end project lifecycle management from strategy, IT planning, implementation, and support.

Microsoft works with partners like Amdocs, Sigma Systems, etc. to deliver telco industry specific solutions and accelerators which can run on Dynamics 365 and the Microsoft Azure Cloud platform or any other third party's cloud environment. These industry focused applications are made available on its AppExchange, the AppSource store.

Telco customer numbers have increased as they begin to adopt the Dynamics 365. Recent customer wins include top tier customers such as AT&T, BT, Reliance Jio, SK Telecom, Telia, and Telstra

SWOT Assessment

Strengths

- **Customer data management is at the core of Microsoft's customer engagement offering.** Microsoft Dynamics 365 centralizes customer data making it accessible through one interface to all operations involved in the customer journey from sales, to marketing to customer service to field support
- **Security and compliance are core strengths.** According to Omdia's 2018/19 ICT Enterprise Insights survey, Microsoft is a leader in the cloud services domain and one of the top three strategic cloud service providers for CSPs. The vendor is known for providing secure cloud environment to all enterprise types (including public, private and hybrid). the vendor has been able to develop and continues to evolve its security capabilities to ensure that customers' data assets hosted on its platform remain secure and observe the required data regulations.
- **Providing a 360-degree view of relationships with customers:** The integration of Dynamics 365 Customer Engagement and ERP with Microsoft's productivity applications (including Microsoft Office), give CSPs a complete customer view. Based on this view, CSPs can obtain data intelligence on customer records, transactions, behaviors, and preferences, along with information about orders, inventory and shipping, which can be used to inform the next best action regarding every customer engagement. Through the Microsoft Dynamics AI offerings, CSPs can get predictive insight that drive decision-making related to customer engagements.
- **Microsoft's platform approach meets CSPs' customer engagement requirements.** The vendor's platform approach enabled by Microsoft Dynamics 365 delivers most of the out-of-the-box capabilities required for omnichannel and personalized engagements. The vendor therefore utilizes configuration using Dynamics 365 extension mechanism, which uses no code extensions, and ISV partner solutions to meet customers' unique requirements.
- **Microsoft has strong capabilities in natural language processing (NLP).** Microsoft's NLP capabilities are fully mature. They are used for tasks such as sentiment analysis, topic detection, language detection, key phrase extraction, and document categorization. These NLP capabilities are well recognized within the CSP vendor environment as we see ISVs like Amdocs going into partnership with Microsoft to develop their industry focused chatbots. CSPs (particularly those with non-English customer base) can also benefit from working directly with Microsoft to support development of their bots. Telefonica's work with Microsoft in developing AURA's cognitive capabilities is testament to the vendor's capabilities here. By combining these NLP capabilities with Microsoft Azure Bot Service, CSPs and telco

vendors can create bots that integrate with apps such as Cortana, Office 365, Skype, Slack, Facebook Messenger, and telco focused BSS/OSS systems to provide bots that understand the telco context and deliver the right responses to customers.

Weaknesses

- **Difficulty in identifying telco-specific applications within Microsoft AppSource.** While the vendor does have an AppExchange, the current structure of this AppExchange makes it difficult to identify relevant applications that can support customer engagements specific to the telco industry.
- **Channels supported for delivery of personalized offers is limited.** Contextually relevant offers can be accessed via any digital channel, but the devices supported are limited. The only devices currently supported are laptops and tablets.
- **Messaging around customer engagement capabilities is narrow.** CSPs look to improve customer engagement capabilities, as well as improve employees' capabilities to support the customers. Go to market messaging for Microsoft's CES offerings focuses more on the employee productivity enhancements and less on improving engagements with customers. Addressing this weakness will enable the vendor to align itself with the pressing needs of its telco customers.
- **Limited capabilities to support engagement on unassisted channels.** Most of the intelligent capabilities or additional capabilities are developed to support human-like or assisted channels like care agents and sales reps. The unassisted channels (e.g., self-service portals or apps) are developed to support customers with limited need to work with an employee. Therefore, it is important that Microsoft drives more messaging around their ability to support these unassisted channels
- **Orchestration capabilities are limited to marketing engagements.** While providing orchestration capabilities for one function is critical for customer engagement, being able to provide holistic end to end orchestration capabilities is imperative to staying competitive in the customer engagement solution area. This is because business functions involved in interacting with the customer need to be inter-connected with the engagements between these functions being orchestrated in a way that ensures that all functions have a view of the interactions going on with the customer and the right and most optimal communication is delivered to the customer.

Opportunities

- **Highlight product capabilities in marketing message.** Today's CSP market is keen to understand how their CES can best enhance their customers' experience. Improving employee productivity is important to this objective. However, with the growing demand from CSPs to increase the use of digital channels (with a view to reducing costs), Microsoft needs to capture within its messaging how their solution can enhance engagements on unassisted channels.
- **Continue to expand engagements with new customer wins.** Recent collaboration with Reliance Jio, AT&T, BT, SK Telecom will open more opportunities for the vendor in these markets, particularly the India market (where Reliance Jio operates). The collaboration can help Reliance Jio target the 40 million SMB market with its enterprise solution, enabling the vendor to gain market share in this domain. Microsoft therefore needs to focus on expanding

activities with its telco client base. Microsoft also needs to emphasize how they can also provide the support services required (directly or indirectly through partners) to improve engagements with CSP enterprise customers.

- **Continue to expand its partner ecosystem.** Through new partnerships as well as deepening relationships with existing partners, Microsoft can continue to quickly evolve its CES. Amdocs for example recently announced an extension of its partnership with Microsoft to enable CSPs to quickly turn their data sets (real time and batch) into insights that can enhance customer experience. Via this partnership, Amdocs' Hadoop-based data management platform and self-service visualization and reporting solution (recently launched) can be hosted on Microsoft Azure. Amdocs CSP customers can bring their data sets from multiple sources, both cloud-based and on-premises, into Amdocs' communications industry-specific data model.

Threats

- **Competition in the telco customer engagement market is growing.** Several vendors are targeting the CSP market with their customer engagement capabilities. However, one of the key factors that vendors must demonstrate is their ability to help CSPs ensure that their customers, engaging on unassisted channels receive high quality experience. Consequently, vendors are investing heavily to demonstrate how well their solutions can meet this requirement. Microsoft has the capabilities to meet this requirement and needs to drive more messaging to highlight its capabilities

Netcracker CES solution for CSPs

Omdia view

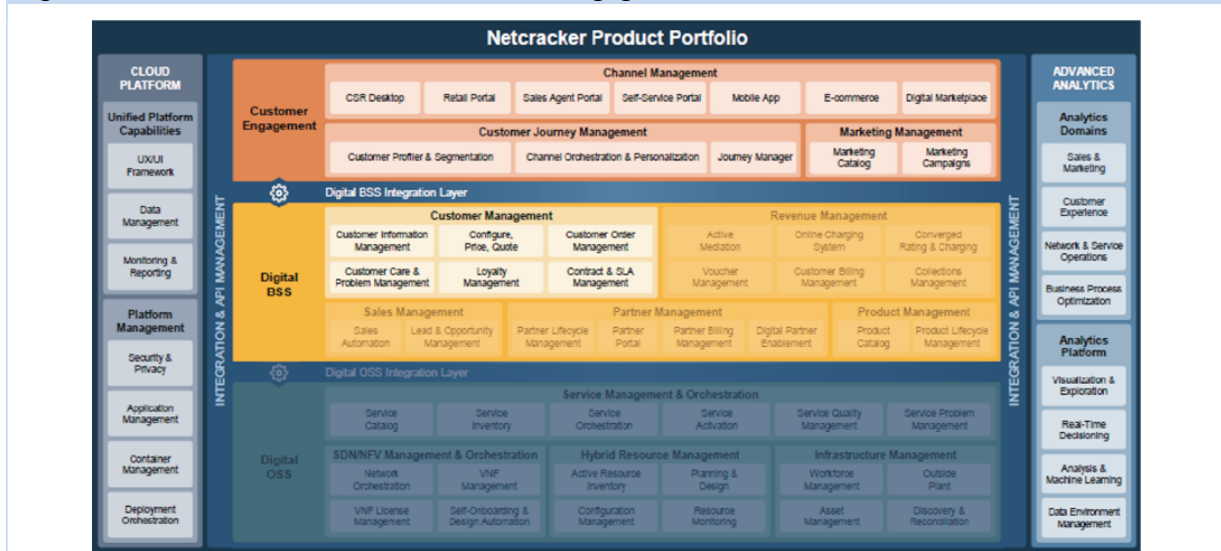
Netcracker has combined its heritage as a leading telecoms CRM platform provider with advanced capabilities from its parent company NEC to evolve its customer engagement capabilities. The vendor has won major deals including deals with Rakuten and O2 UK to support the operators' ambitions for the CSP market, particularly with respect to driving improved customer experience through loyalty programs. The Rakuten deal involves tracking every form of interaction a customer makes with the CSP as well as its partners and rewarding them accordingly. Given the scale of Rakuten's potential partner ecosystem (inherited from its parent company), deploying such a solution requires consistent tracking of customers' activities and being able to respond with the right offer at each point in time. Such wins demonstrate how well Netcracker can support CSPs in transforming how they engage with customers.

The vendor could benefit from partnering with data management providers (DMPs) to further deepen its ability to personalize customer engagement for CSPs' prospective clients. Netcracker's current approach to personalizing customer engagement relies on the internal data sets obtained from a CSP's front end and backend systems. Taking this approach is useful but limits the view the CSP has to prospects visiting their websites, mobile apps or portals for example. The vendor's recent partnership with Microsoft provides an opportunity for Netcracker to key into Microsoft's DMP capabilities. Netcracker should also continue to evolve its Netcracker Business Cloud offering as it will provide a platform for CSPs to improve engagements with enterprise customers.

Overview of Netcracker's customer engagement solution for CSPs

Netcracker's customer engagement solution combines capabilities from its customer management and customer engagement suite of offerings. This solution set is focused on enhancing customer engagement functionalities to enable CSPs to achieve higher conversion rates and reduce support costs. As highlighted in Figure 7, Netcracker's solution includes the products within the customer engagement layer and some products in the Digital BSS layers.

Figure 7: Overview of Netcracker's customer engagement solution to CSPs



Source: Netcracker

Both layers run on its cloud platform and are supported by its advanced analytics capabilities.

Core components of the Customer Engagement layer are presented below. These components now form the digital experience layer which helps CSPs define and manage the most relevant customer journeys and experiences that can be adopted by a channel or device includes;

- Channel Management:** enables CSPs to optimize sales, ordering, and customer support processes across channels such as point of sales, self-service portals, mobile apps, social media etc. Analytics capabilities are embedded within the system to provide updated and contextual information on customers to ensure that the right services and products are delivered to them, at the right time and through the right channels.

The vendor's E-commerce and Digital Marketplace channel products which enable the sales, marketing and management of CSPs' digital services portfolio are included in the Channel Management suite. They enable a CSP to utilize its growing partner ecosystem to extend its portfolio of offerings to customers (particularly enterprise customers). With the Digital Marketplace for example, services offered by partners can be quickly onboarded, included as bundled offerings and made available to customers across multiple channels.

- Customer Journey Management platform:** Netcracker's Customer Journey Management coordinates the communications, particularly product-related information that's delivered to customers, on multiple channels of engagement. It includes:
 - Customer Profiler and Segmentation:** provides a single aggregated view of the customer, based on information collected from online and offline sources. Attributes

include raw information obtained from supporting BSS/OSS systems and calculated attributes such as NPS, churn propensity and lifetime value. Customer segments are also created based on these attributes including demographics, preferences, interests, usage and more to deliver targeted campaigns and personalized interactions. It also leverages self-learning capabilities based on machine learning to flag up events of interest during every interaction.

- **Journey manager:** enables CSPs to design, test, execute and track customer journeys [across one or multiple customer touchpoints](#). It includes a business process orchestration engine, journey design studio and journey template library – to fast track the creation of these journeys. Customer journeys can be triggered based on customer actions and adjusted in real-time based on current or forecasted behavior and CSPs business objectives.
- **Channel Orchestration and Personalization:** allows CSPs to design and coordinate user [experiences \(type of content and structure of the UI\) across different channels](#) quickly and efficiently. It allows CSPs to create email templates, self-service portal widgets, mobile and customer service representative desktop applications. It also enables CSPs to define rules based on which content will be shown to specific customer segments. It also utilizes a centralized repository for all marketing content that can be deployed across both [conventional and digital channels](#).
- **Marketing management:** incorporates contextual customer information obtained from the Customer Profiler and Segmentation and utilizes this contextual insight to deliver personalized interactions and offerings to improve a customer's propensity to buy a product/service and reduce customer churn.

Integrations with other supporting systems such as CRM, order management and service fulfilment systems enable Netcracker's customer engagement offering to support engagements specific to customer-facing functions such as marketing, sales and care. These integrations are enabled using open APIs which are compliant with TM Forum's and Open APIs.

Netcracker's customer engagement solution can be deployed within its own cloud environment (as a fully hosted service within its data centers), that of a third party, for example AWS, Google and Microsoft Azure (as a public or hybrid cloud service) or the customer's own cloud environment (as a private cloud offering). The Netcracker customer engagement solution comes as a cloud-native solution with the option of having the solution components, including databases delivered as microservices. The vendor's microservice architecture approach follows the shared (involves the deployment of one instance of a microservice and is used for all tenants) and single multitenancy approach. The shared multitenancy is possible where all tenants use the same behavior, and only data differs between tenants, for example in the instance of a CSP with multi-country deployments. Solution support, deployment, and updates installation follows the DevOps approach.

SWOT Assessment

Strengths

- **Strong end-to-end customer data management and analytics capabilities** which span data ingestion, analysis, correlation, and more. These functions support all customer channels and customer interactions. They also form the foundation of the vendor's Customer Profiler and Segmentation product which is built based on large data sets collected throughout a

customer's journey with the CSP. The data sets also are based on interactions that the customer has with the CSP's partner (e.g. OTT service provider). Every interaction is collected and stored to address several use cases like customer loyalty programs.

- **Netcracker provides effective engagement orchestration functionality.** Netcracker's Customer Journey Management product forms the core of the vendor's orchestration capabilities. It enables automated and centralized coordination of customer-facing functions, leveraging insights from the data coming from different engagement channels and processes to understand and respond to customer context. In addition, Customer Journey Management includes a context decisioning engine which centralizes the decisioning of workflows associated with customer engagement. This reduces the time to implement new changes to the system and is based on changes to business policies and strategies.
- **Delivers strong portfolio of telco focused professional services:** Netcracker's professional services capabilities include business and operations consulting, end to end turnkey delivery and application development and DevOps support services. The vendor's consulting and systems integration offerings enables the vendor to go to market as a prime vendor with capabilities to support transformation of existing customer engagement programs.
- **Extensive experience in helping CSPs sell to B2B customers:** Netcracker has invested and continues to invest in enabling CSPs to sell and support their B2B customers. Recent developments have culminated in the enhancement of their Digital MarketPlace product and CPQ offerings to enable CSPs to sell Cloud, Business Productivity, SaaS offerings and SDN/NFV-based services to their customers.

Weaknesses

- **Netcracker's route to market is primarily dependent only on in-house capabilities.** The vendor's commercial model is driven mainly by its global and regional sales functions and partner relationships are typically limited to those in complementary technology areas. While this approach indicates the vendor's confidence in its ability to reach new prospects and support existing customers on its own, its depth of coverage in terms of market reach (particularly at the regional level) is impacted by not working with partners such as systems integrators (SIs). It could increase market potential if the vendor expanded its partner network to ensure good coverage of potential target customers, particularly in areas where regional SIs have a strong foothold.

Opportunities

- **Netcracker has a broad customer base of customer management deployments** which provides opportunities to bring to market its Customer Engagement offerings. Recent deployments with customers like Rakuten also demonstrate how well the vendor can support complex loyalty programs. Experience generated from this engagement strengthens Netcracker's positioning in the customer engagement market.
- **Build partnerships with data management platform providers (DMPs)** to gain access to external data sources that will further enhance the vendor's capability to deliver personalized customer engagement.
- **Utilize access to parent company, NEC to evolve Customer Engagement solution.** Capabilities from NEC include AI/ML from its NEC the Wise portfolio, partner management, digital identity management, mediation and big data analytics capabilities are all critical to

the development and future extension Netcracker's solution offering for customer engagement. For example, utilizing NEC's AI/ML capabilities to automate the detection of customer journey paths and optimize the routing of engagements in a way that achieves mutual benefits for the CSP and its customers.

- **Netcracker Business Cloud provides opportunities to improve CSPs' engagement with enterprise customers.** Netcracker Business Cloud is a full-stack SDN/NFV solution—from VNFs to orchestration, BSS, OSS, customer self-service portals and a digital marketplace, all delivered as a service. The inclusion of network infrastructure, support systems, and a marketplace (which provides access to business applications for productivity) all provided on a single cloud platform will facilitate CSPs' ability to rollout and support new services quicker. It also holds the potential to enable CSPs to achieve their customer engagement objectives as all customer interactions can be orchestrated from this single platform and insights drawn from these interactions are used to ensure customer engagement remains relevant and personalized. Achieving this capability will however be dependent on Netcracker's development roadmap for Netcracker Business Cloud.

Threats

- **Vendors leveraging open source AI tools to support their customer engagement solution** are the biggest threat to Netcracker's solution. Market competitors can offer more competitive pricing by leveraging open source tools, whereas by using a proprietary AI solution, pricing becomes a disadvantage for Netcracker.

Nokia CES solution for CSPs

Omdia view

Nokia's CES demonstrates how the combination of network, customer, and business systems support the delivery of personalized customer engagement. The inclusion of products such as its Service Management platform and its IMPACT consumer device management platforms reflect the key role that functions from the network domain can play in driving the orchestration of customer engagements specific to the CSP market. The vendor's solution does not provide some of the core channel applications and marketing or sales automation systems directly. However, it has decided to set up key strategic partnerships with leading players in these areas (e.g., Salesforce) to fill this gap as some CSPs are not willing to invest in new systems while existing systems still meet the business requirements for which they were purchased. Nokia is therefore focusing on building capabilities that maximizes CSPs' existing investments to drive better engagements with customers. With this approach, Nokia presents itself as a great partner to channel application providers, CRM applications or platform players. To compete well against the market leaders and play a more strategic role in being a key partner to CSPs to improve customer engagement practices, Nokia should expand its partner ecosystem of companies with CRM capabilities. In building these partnerships, Nokia should consider vendors with a development approach that fits well with its own development approach, which is driven by the Nokia Common Software Foundation.

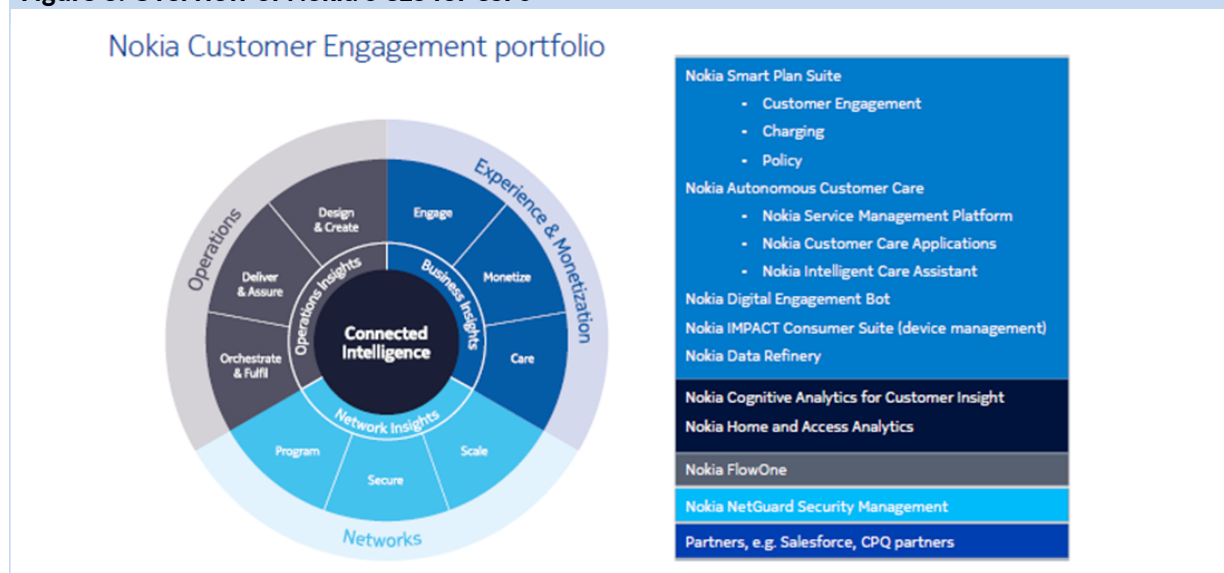
Overview of Nokia's CES solution for CSPs

Nokia views CSPs being able to engage with their customers in real time, delivering services to customers on demand, wherever and whenever they wish, in real time. This vision can however only be realized by utilizing analytics capabilities that can determine customer intent, cause, and next-

best action to drive better engagement and customer loyalty. Utilizing self-service capabilities to personalize engagements is also critical to the vendor's vision.

In addition to utilizing its products and expertise in managing CSPs' network, working with vendor partners in the customer engagement space has enabled Nokia to bring innovation to CSP customer engagement solutions. By exposing network and device capabilities to these partners, the vendor ensures that its CSP customers can deliver optimal experiences to their customers.

Figure 8: Overview of Nokia's CES for CSPs



Source: Nokia

As Figure 8 shows, Nokia's CES solution includes several products from its monetization solution, customer care solutions, digital engagement BOT, device management product (Nokia IMPACT Consumer Suite), and orchestration product (Nokia FlowOne) portfolios, they include:

- **Nokia Monetization Solution:**

- **Nokia Smart Plan Suite (SPS).** A monetization platform offering which includes policy, charging, and customer engagement functionalities. They enable CSPs to deliver personalized campaigns to customers. The solution integrates with the CSP's campaign management solution, product catalogue and other BSS functions and ensures that customers receive services that are best suited to their context. Nokia SPS builds on the legacy of acquired assets such as Alcatel Lucent's SurePay, Dynamic Services Controller, and Smart Plan Builder products, as well as Comptel's Monetizer. The Nokia SPS has been built to support IoT and 5G based services. The product is cloud-native, and its architecture incorporates Nokia's Common Software Foundation framework. Since its launch in 2018, the vendor has recorded about 25 CSP customers including T-Mobile and Vodafone which emphasizes the value that Nokia SPS brings to enabling CSPs deliver personalized experiences to their customers.

- **Nokia Analytics Solution:**

- **Nokia Cognitive Analytics for Customer Insight (CA4CI).** Provides AI-driven real time customer insights of individual customer experience based on big data and analytics architecture. It gives you a complete view of customer satisfaction, based on device,

service, billing and care insights, across mobile and fixed networks. It helps to identify issues quickly, prioritize improvements, and trigger automated actions, even proactively, based on the customer and business impact.

■ **Nokia Autonomous Customer Care Solution:**

- **Nokia Service Management Platform (SMP).** The Nokia SMP enables the configuration of automated workflows to support omni-channel customer care for any network, service, or device. A unique advantage of SMP is that workflows created are reusable across channels, saving both agent and subscriber effort and therefore generating operating efficiencies for the CSP. It utilizes machine learning algorithms from Bell Labs that drive troubleshooting actions based on the highest predicted resolution for a customer at the time they call, is using self-help or are being assisted by field care. SMP also enables proactive care by leveraging home and access network insights and device management parameters. The combination of the SMP and Nokia analytics performs the orchestration functions for customer engagement. SMP via the support of the Nokia analytics function tracks the effect of workflows or recommendations executed by the customer or any other channel. If one recommendation (enabled by ML) fails to generate expected results, it recommends other actions
- **Nokia Digital Engagement BOT (DEB).** A chatbot platform for engaging with customers on digital channels, providing support throughout their journeys. Key functionalities enabled by the Nokia DEB includes targeted advertisements, real-time notifications, contextual offers, enabling real time subscription, charging and usage information, and targeted messages to activate and onboard new customers.
- **Nokia IMPACT Consumer Suite.** Provides a common converged cloud device management platform built for CSPs to address the complexities of securely managing home and mobile devices throughout the entire lifecycle from automatic device detection, configuration, and feature/ service updates. The Nokia IMPACT product includes capabilities that support the automation of customer engagement workflows including automated device provisioning and monitoring

Included in its customer engagement solution offer are solutions developed with ISV partners such as CloudSense, Cerillion, Salesforce.com, and Vlocity, as well as SIs such as Accenture, IBM, and TCS. An example of a solution developed with partners is the Nokia Intelligent Care Assistant (ICA) for Salesforce. The ICA enables intelligent customer service across all channels, from proactive and self-care to assisted and field care. It harnesses the power of Nokia's machine learning based workflows, network analytics and device insights and exposes them through the Salesforce Service Cloud to customer or care agents. This unique combination generates a holistic subscriber view and helps CSPs drive operating efficiencies, satisfaction and loyalty in new ways.

SWOT Assessment

Strengths

- **Nokia's CA4CI offering delivers comprehensive customer data management and analytics capabilities critical to customer engagement.** To personalize engagements with customers, CSPs need to collect as many data sets across the customer journey and track them in real time. CA4CI collects and consolidates data sets from varying data sources to create distinct

profiles on all customers. It then uses analytics and machine learning to mine these data sets to generate a customer experience index (CEI) at every touch point in the customer journey for both mobile and fixed networks. The CEI is then tracked to identify triggers for a next best action, e.g. the delivery of an offer or the provision of relevant feedback to a customer inquiry.

- **Nokia has strong network infrastructure and analytics capabilities to drive effective engagements with customers.** Utilizing Nokia's network, service and customer analytics capabilities, CSPs can drive effective marketing communications, sales and customer care support. An example is seen in the use of Nokia's CEI to personalize offerings targeted at customers ensuring that they receive the right products/services to the right customer at the right time. Nokia's expertise in technical troubleshooting, monetization, provisioning, and service/product activation further strengthen its ability to improve customer engagement
- **Nokia IMPACT Consumer Device management systems enriches customer engagements during different phases of the customer lifecycle.** Once devices are connected to the CSP's network, they connect to Nokia's IMPACT platform which then can perform over the air activation of the devices and monitor their performance. Issues identified on the devices trigger the device manager to launch an automated fix associated with the problem. For issues that can't be resolved automatically, a ticket is raised within the CRM (Salesforce in this case) to resolve the issue. A ticket can also be raised (using the intelligent care agent) to inform customers that an automated fix has been performed to resolve identified issues.
- **Nokia has strong partnerships with key players in the customer engagement market for CSPs.** Partnerships with companies like Salesforce, CloudSense and Vlocity provide the vendor opportunities to deepen its capabilities within the customer engagement solution market. For example, Nokia and Salesforce's partnership sees both companies go to market with Customer Engagement solutions that combines the capabilities of both vendors. Nokia integrates its Device management, Home analytics with Salesforce's products like Marketing and Service Clouds to enhance engagements between CSP and customers, including automatically creating cases within CRM systems to address customer issues.

Partnerships with social media channel providers also enables Nokia's CSP customers to utilize information from these providers to personalize experiences for existing and non-existing telco customers. CSPs can provide social media platform providers like Facebook with information on customer attributes that are of interest with a view to targeting customers that meet these attributes with offers.

- **Acquisitions of Alcatel-Lucent and Comptel has strengthened Nokia's CES:** The core of Nokia's customer engagement solution is driven by assets the vendor acquired. Examples include SMP, SPS, FlowOne and Data Refinery which came via the Alcatel-Lucent and Comptel acquisitions. Via the acquisition of Alcatel-Lucent, Nokia now has access to Bell Labs (now Nokia Bell Labs) to support innovation in areas such as analytics which are relevant to customer engagement. There are also recent innovations provided via Nokia's Bell Labs

Weakness

- **Nokia's channel management portfolio is limited to care channels.** Hence the vendor will depend on telco CRM providers like Salesforce to provide access to customer channels through which customers can get access to its customer engagement enriching capabilities.

Competitors such as Netcracker, Amdocs, and Oracle provide these channel management capabilities and are therefore better placed to provide a more comprehensive engagement solution

- **Provides limited customer-facing functional support.** Nokia has well-developed customer and field service capabilities. There are however gaps in its solution's ability to provide support for other functions – sales and commerce. Personalizing customer engagement needs to go beyond personalizing a small set of business functions but include all functions involved in engaging with the customer. This combined view will enable the CSP to gain a good view of the customer context and provide the right communications to the customer. Vendors such as Amdocs, Microsoft, Oracle, and SAP can directly support customer engagements involving more than function, with vendors supporting more functions providing more comprehensive offering to CSPs
- **Limited view of the customers' activities outside of the CSP and social media domain.** Capabilities to support non-existing customers is limited to the social media environment. This visibility while it does help CSPs engage well with their customers, does not provide scale in terms of how much insight can be gleaned from the customer, for example, what websites have they been visiting, what searches have they made on platforms outside of the telco's or social media platform. Companies like Oracle provide DaaS offerings that enable CSPs to utilize insights on customers' online activities to personalize their experience. This capability is currently not being provided within Nokia's portfolio.
- **Nokia CES does not provide content creation and DAM capabilities:** The vendor is reliant on vendor partners to provide content and digital asset capabilities. Content creation and DAM are designed to centrally manage and create digital marketing assets sitting across the business. They ensure customers receive content relevant to their context. So once a CSP understands who the customer is and what they want, it is the responsibility of the content creation and DAM systems to serve up the most relevant message to the customer in a way that's suited to the channel of engagement. Vendors such as Adobe and Oracle provide these capabilities and have consequently made their solutions standout in the market

Opportunities

- **Acquire CRM assets which provides channel applications.** Including a portfolio of channels – digital and non-digital is a strategic asset within every vendor's customer engagement portfolio. The vendor can demonstrate strong expertise and experience in supporting customers evolve how they engage with customers on these channels. The Salesforce partnership enables Nokia to play a role in the CES space. The vendor can look to setting up similar strategic partnerships with key players in the channel application or CRM space. However, owning the channels of engagement further strengthens the value that Nokia's CES proposition can bring to CSPs.
- **Leverage its services capabilities to enrich its CE solution offerings.** Nokia's professional services such as consulting and systems integrations can be applied to supporting its customers improve their customer engagement capabilities. Nokia can also strengthen its partnership with Salesforce by serving as a strategic services partner in the rollout of omnichannel customer engagement solutions to CSPs.
- **Nokia has a large CSP customer base.** This can serve as upsell and cross sell opportunities for its CES offerings Given the vendor is a key player in the network equipment domain with its

infrastructure deployed across the globe, the vendor has a ready market to which it can sell its offerings to.

Threats

- **The CES market is fiercely competitive.** Vendors with more integrated solution offering and that take a platform approach can deliver better solution pieces compared to Nokia's which is highly fragmented. The Customer Engagement platform approach is critical as via a single platform, the CSP can manage engagements and orchestrate all forms of engagements in a way that derives optimal experiences to their customers

Oracle customer engagement solution for CSPs

Omdia view

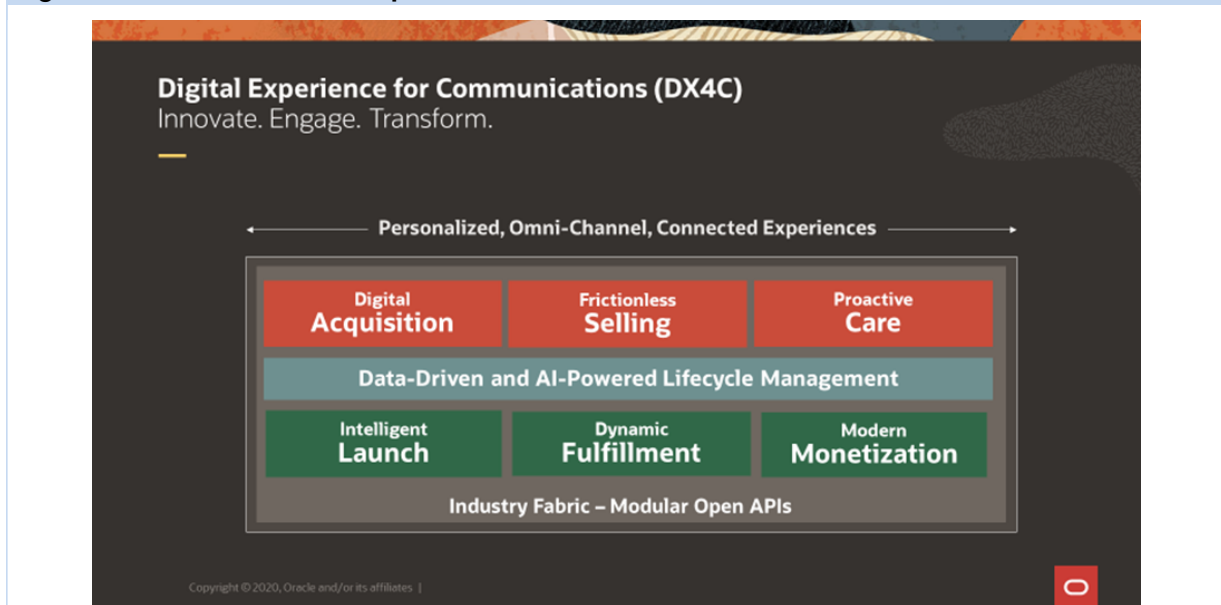
Oracle's customer engagement solution – Digital Experience for Communications (DX4C) is a comprehensive solution which reflects Oracle's combined expertise in modern day customer engagement practices and telco operations. Its solution includes several components of its Oracle CX Cloud and cloud offerings developed specifically for its communications market. With its solution, CSPs can orchestrate engagements with both existing and prospective clients. This is made possible by the vendor's data-as-a-service (DaaS) offering (Oracle Data Cloud) working closely with front- and back-end systems. The vendor's platform approach to achieving CSPs' customer engagement requirements aligns with Omdia's view on how these solutions need to be packaged and used by CSPs. The platform approach ensures that communications between customers and CSPs are consistent, with customer journeys being centrally orchestrated and driven using unique customer identity which connects to all integrated supporting systems.

To maintain its leadership position, Oracle should invest in developing capabilities that provide insights into Customer Journey paths that meet the unique requirements of the industry. Some of these requirements will demand connecting to a broader set of BSS/OSS functionalities to ensure that relevant communications are being pushed to customers when required. The vendor also needs to consider extending its cloud service offerings to include multi-tenancy for private cloud environments.

Overview of Oracle's CES solution for CSPs

Oracle's Digital Experience for Communications (DX4C) is the vendor's CES solution to telcos. It is natively built to support engagements with digital consumers and businesses. The DX4C enables enterprises like CSPs to track, interpret and map customers' digital profiles, behaviors, and transactional data with internal operational data from OSS/BSS systems in real-time. The resulting insights will enable CSPs to personalize engagements in a way that traditional CRM systems can't support.

The solution is composed of seven component domains, of which four provide the foundation for customer-facing digital engagement. Each domain includes functional capabilities delivered by Oracle's SaaS/PaaS and on-premise applications. Figure 9 provides an overview of the solution portfolio:

Figure 9: Oracle DX4C solution portfolio

Source: Oracle

The four key solution components that most directly impact the customer engagement are as follows:

- Data-Driven and AI-Powered Lifecycle Management.** Helps CSPs to understand the customer's digital profile relationships and behaviors, such as websites visited and products viewed, which are outside the scope of current generation of CRM, billing, and data management systems. Included within this component is Oracle's Customer Data Management (CDM) which combines first-, second-, and third-party data sets on customers into a single source of truth. The CDM also tracks and updates the customer digital profile. The "know your customer" solution is offered with Oracle's DaaS, which currently tracks over 6 billion consumer and over 1 billion B2B digital profiles in real time.
- Digital Customer Acquisition.** Uses a combination of digital profiles and channels to connect with and acquire customers. The key capabilities provided by this solution component include: audience management to analyze, define, and create micro-segments of the customer base, third-party profiles, AI capabilities to provide intelligent offers to customers and prospects, and data tracking capabilities to provide personalized campaigns and automated workflows (that enable an AI-based chatbot to simplify targeting of campaigns). Oracle's marketing, content, experience and social cloud offerings play critical roles within this solution, Oracle's Marketing, Content and Experience and Social Cloud offerings play critical roles within this component of the solution. The Oracle Marketing Cloud provide most of the capabilities in this domain, including the customer segmentation, and campaign management. The vendor's AI apps for customer experience and engagement, such as Intelligent Offers and Intelligent Campaigns, are also offered as part of the digital customer acquisition
- Frictionless Selling (Omnichannel Sales and Ordering Life Cycle Management).** Unifies the sales catalogue and order capture for all channels, to provide end-to-end ordering journeys from digital store fronts to assisted channels (customer engagement center, chat bots, retail,

dealers, and direct sales). Key Oracle applications providing these capabilities include: Oracle Commerce Cloud, Oracle CPQ Cloud, Engagement (Sales) Cloud, and Order Orchestration products (OSM).

- **Proactive Care (Blended Sales, Service, and Customer Care for Employees and Customers) .** Oracle CX Platform for Customer Care is the core Oracle product used in this solution component. It provides support for all customer interactions across any channel, and empowers the users (including employees, customers, field sales, service personnel, and chat bots) to address and resolve customer enquiries. These capabilities are supported by a customer-360 view (provided by Oracle CDM) including account views, billing and usage, order status, next-best action, customer lifetime value, customer satisfaction index (CSI), and net promoter score (NPS).

Complementary products and services to Oracle DX4C solution set, include the Oracle Integration Cloud and the Oracle IoT Cloud. The Oracle Integration Cloud leverages Oracle's application expertise to build an extensive library of adapters to Oracle, third-party SaaS, and on-premises applications to enable you to deliver new business services faster. The Oracle IoT Cloud is a managed platform-as-a-service cloud-based offering that provides communication services between IoT devices and enterprise applications running on the cloud. Oracle IoT Cloud achieves this capability by creating "digital twins" or virtual versions of the devices (which are built using Android, JavaScript, Java, or IOS) and the actual devices, then establishing a secure communication path between both using REST APIs. The Oracle IoT Cloud offering is unique and relevant to the CSP market as CSPs offer IoT services to enterprise and consumer customers and must find effective ways to engage with these customers to ensure satisfactory experiences are delivered to them.

The Oracle Cloud Marketplace plays a critical role in enabling its CSP customers innovate their engagement solutions. It is an online store dedicated to marketing cloud business apps and professional services offered by Oracle Cloud partners. These applications either integrate with Oracle Cloud applications or are developed to extend existing Oracle Cloud solutions. These applications can then be accessed by CSP customers that are seeking to adopt innovative cloud solutions to evolve their existing deployments.

Partner solutions also play a critical role in extending Oracle's capabilities to support development and deployment of CES to telcos. These partners include Accenture, Conemis (with specialist capabilities in data migration from on premise Siebel to Cloud based DX4C solution), Capgemini, Deloitte, TCS, TechM, Wipro, and more who provide professional services such as systems integration, implementation or consulting capabilities at a regional and global level. Oracle's partners can also develop applications on the Oracle Cloud platform, which integrate directly with Oracle's application to provide an integrated solution that meets customer engagement requirements.

SWOT Assessment

Strengths

- **Oracle's DX4C offering is one of the most comprehensive solutions assessed in this research.** The vendor's solution delivered about 88% of the technical features directly from the solution portfolio with the rest provided either through a partner or add-on products not included within the portfolio. Capabilities supported include IoT devices as channels of engagement that require a different approach to the customer engagement challenge – one which is heavily based on intelligence drawn from devices and associated sensors

- **Oracle's DaaS offering strengthens its personalization expertise.** It enables CSP customers to receive an additional view into customers' digital activity (via third party digital channels). This extended view is obtained based on the data collected from data management providers (DMPs) and held within the Oracle Data Cloud platform. These data sets (covering transactional, demographic and click-stream data) can then be mapped with a CSPs' billing and CRM data to provide complete customer profiles that can be used by marketing, sales, digital storefronts and customer care teams to support any interaction.
- **Oracle's Social Cloud enhances sales and marketing engagement opportunities within third-party channels.** The Oracle Social Cloud tracks specific themes or listening topics that generate opportunities for CSPs to deliver personalized campaigns. This social listening capability is always on and ready to trigger personalized campaigns when interactions on a supported social media platform align with the listening topics. This social listening capability uses latent semantic analysis to identify positive and negative social media sentiment in real-time and respond utilizing the most effective channel. The Oracle Social cloud works in real time, to ensure social media interactions can be handled swiftly and within context.
- **The Oracle Cloud Marketplace provides a platform for continuous innovation.** It is an online store dedicated to marketing cloud business apps and professional services offered by Oracle Cloud partners. It therefore enables CSPs to extend the functionalities of their engagement solutions to include new capabilities from Oracle and its partner solutions built based on the Oracle Cloud.
- **Acquired assets have accelerated development of the Oracle's DX4C offering.** These acquired assets include CloudTwist (customer loyalty), DataFox (an AI-driven sales intelligence provider), Moat (digital advertising measurement solution provider), Cross Wise (a cross-device identification mapping), AddThis (a media web-tracking technology company), Maxymiser (cloud-based software to test, target and personalize webpage and app content), and BlueKai (cloud-based big data platform that enables companies to personalize online, offline and mobile marketing campaigns) have contributed to strengthening Oracle DX4C.

Weaknesses

- **Oracle does not natively provide speech and text analytics functions.** Its inability to currently support speech and text analytics implies that it is unable to provide natural language processing capabilities where speech and text analytics will be required to provide contextual insights into customer discussions. Oracle is currently developing native capabilities in this area. However, in the meantime, they work with third party to provide these capabilities.
- **Oracle does not provide a productized customer journey mapping or management product specific to the telecoms market.** It would however provide a half day or multi-day engagements (at no additional charge) to determine places where they can help their telco clients with process and/or technology solutions.
- **OSS capabilities such as device management are lacking in Oracle's CES portfolio.** This is where solutions natively provided by telco network equipment providers trump those provided by core IT solution providers like Oracle that generally partners to provide comparable capability.

- **Cloud capabilities offered to support its solution is limited.** For cloud capabilities provided to support its DX4C solution to CSPs, Oracle does not support some of the capabilities assessed including hosting applications and content within the customer's data-center, and implementing architectures involving multi-tenants in a private environment and isolated private instances

Opportunities

- **Acquire customer journey mapping and management capabilities.** The vendor provides a customer data platform called Oracle CX Unity. It brings together online, offline, and third-party customer data sources to create a single and dynamic view of the customer. However, the vendor needs to augment this product with a capability that provides for visualization and mapping of the resulting data points to reveal the journeys that customers are taking, analyze these as leading to an opportunity or risk and determine what steps need to be taken to lead the engagement to a successful point. The CJM offering thus enables the centralized orchestration of the customer journey across different channels. Acquiring assets with customer journey mapping and management capabilities will strengthen the vendor's offering
- **Oracle has a large install base of customers using Siebel and products within its Oracle CX Cloud.** There are about 1,200 deployments of Oracle CX and 600 of the Oracle Siebel in telecoms alone. This broad install base provides a target market to upsell its new products with enhanced capabilities to provide better engagements with customers.
- **Development roadmap to fill the speech and text analytics.** Oracle's future roadmap includes the introduction of intelligent search capabilities. These capabilities will rely on speech and text analytics to understand questions posed by customers to available repositories such as product catalogues etc. This capability will provide better engagement with CSP customers
- **The Oracle IoT Cloud offering will create upsell opportunities for Oracle.** With the industry moving to 5G, with the opportunity to deliver more IoT based services, Oracle's IoT Cloud offerings creates opportunities for the vendor to play a more critical role in enabling CSP customers offering these IoT services to engage effectively with their customers.

Threats

- **Multiple vendor types targeting the telco customer engagement domain.** Multiple vendors with varying capabilities; analytics, BSS, network expertise and OSS have competing solutions to offer to CSPs. To continue to command a leading position in this space, Oracle must continue to evolve both its capabilities and strategy for the telecoms market. The vendor should continue to follow its platform approach to developing its solution and keep working with partners to innovate solutions based on this platform offering.
- **Competition from vendors supporting delivery of SaaS offerings to multiple cloud environments.** CSPs want to avoid vendor lock in and are looking for flexibility in choice of cloud vendors they choose to work with. Oracle deploying its SaaS CX offerings to just its own cloud environment would deter most CSPs from taking on its solution. Oracle needs to re-assess this approach and consider offering more flexible cloud offerings (which includes its SaaS CX offerings) and which include multi-tenancy within a private environment. CSPs fully

appreciate the benefits of the cloud but at the same are cautious about the strict regulations they must adhere to

SAP customer engagement solution for CSPs

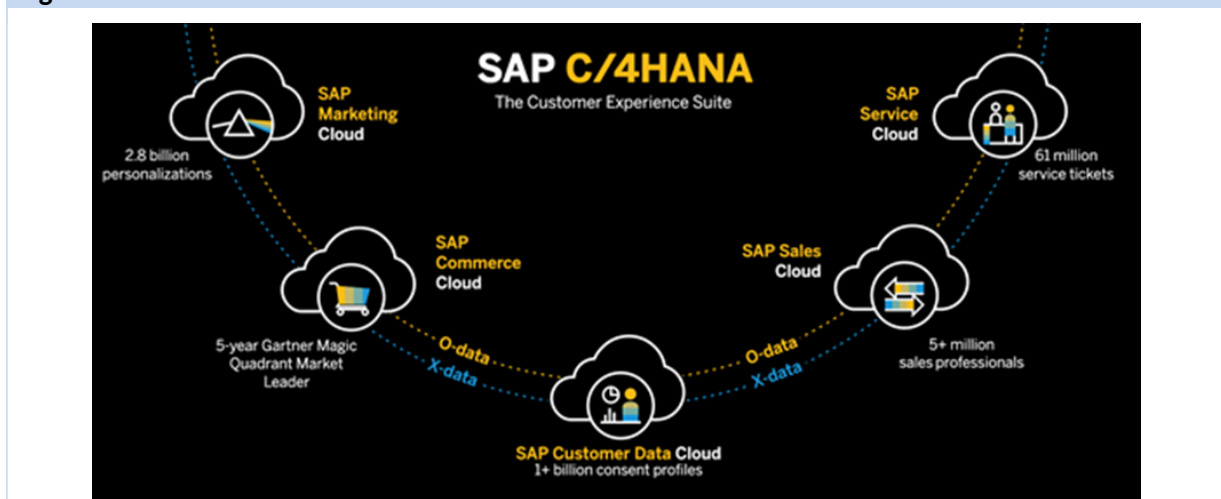
Omdia view

SAP C/4HANA provides CSPs the potential to combine customer data and operations data, backed by its orchestration and data analysis capabilities to provide relevant engagement with their customers. SAP's C4/HANA solution takes a similar approach as the leading players, taking the platform approach which connects its five core cloud components with other back- and front-end systems to drive effective and relevant engagements with customers. Most importantly, SAP's consent management capabilities make its offering stand out. CSPs can take advantage of this capability to ensure that as they optimize their engagement strategies, they are doing so in a way that aligns with all governing relations. To drive more personalization of engagements with telcos' customers, building more partnerships with OSS system providers to generate more pre-integrated solutions will be important. Its open integration and APIs can accelerate the creation of these solutions.

Overview of SAP customer engagement solution for CSPs

SAP C/4HANA (one of SAP's core solutions to connect the enterprise value chain with the customer) is SAP's CES for CSPs. It is an integrated customer experience platform derived from the formerly branded SAP Hybris customer engagement and commerce portfolio and includes SAP's core cloud offerings for customer experience (as shown in Figure 10).

Figure 10: SAP's CES for CSPs



Source: SAP

All products in the SAP C/4HANA suite can be purchased individually and integrated with each other, as well as other SAP and third-party systems. They can all be delivered via the cloud; and, some can still be delivered on-premise in line with the demand from the market. SAP C/4HANA includes:

- **SAP Marketing Cloud.** Leverages the SAP HANA in-memory database that grants marketers the ability to access real-time big data processing, and high-performance analytics related to customer lifecycle management processes such as customer segmentation, journey orchestration, and marketing performance measurement. The platform encompasses both

B2C and B2B capabilities, including commerce marketing, lead management and account-based marketing.

- **SAP Commerce Cloud.** Based on the concept of an enterprise product content management, SAP Commerce Cloud enables the generation, management, and distribution of product data and related content across all channels; thereby enabling effective and consistent sales engagements across channels. The SAP Commerce Cloud includes a telco accelerator which enables CSPs to provide bundled offerings (including traditional telco services and digital services) to their customers. Customers on the other hand can get access to these offerings or create offerings based on their preferences, enabling them to exercise control over their purchasing journeys. The SAP Commerce Cloud Telco accelerator also includes supporting processes such as serviceability checks, compatibility checks and eligibility checks. These checks are performed via a pre-compiled rules engine implemented within the product to enable customers to receive immediate responses to enquiries or requests regarding products and services they wish to purchase.
- **SAP Sales Cloud.** SAP's key sales force automation product. It is also part of its Intelligent Sales Automation portfolio that includes SAP Intelligent Sales Execution and (pipeline management, forecasting). SAP Sales Cloud includes opportunity management and scoring, account management, retail execution and web store, lead management, and scoring. Complimentary SAP Sales Cloud solutions include Commissions.
- **SAP Service Cloud.** Provides a broad solution for customer service needs including self-service, knowledge management, specialized bots, contact center, field service and crowd service. Business models such as crowd service enables CSPs to capitalize on new opportunities such as the "gig (temporary work) economy" to deliver field service anywhere around the globe. SAP Service Cloud is natively integrated with SAP ERP, which gives services agents immediate access to key customer information like existing service agreements, warranties, installed base, part availability and pricing.
- **SAP Customer Data Cloud.** Includes SAP Customer Identity and Access Management for B2C, SAP Customer Identity and Access Management for B2B, and SAP Enterprise Consent and Preference Management solutions. These solutions enable CSPs to offer registration and login, consent and preference capture, storage, and processing, as well as enable capabilities that allow customers to define and manage their consent preferences and user profiles. CSP employees in marketing, sales and support, for example, can query this offering to determine a customer's consent and preferences, which are stored in an audit-ready vault. CSPs can also take advantage of full consent management capabilities to ensure that CSPs align with applicable consumer data privacy and protection regulations (local, regional, and industry-wide).

SAP continues to evolve its offering to align with the growing demands of CSPs. In 2018, the vendor announced the offer of a new subscription-based Telco and Media accelerator for the SAP Commerce Cloud solution. The accelerator takes into consideration, critical components that are required for effective engagements between customers and the CSP during the buying journey. Some of the features included in this accelerator are: a product catalogue holding all information on all product and service offerings, information on all promos, self-care functionalities for full visibility, and control over personal data, subscriptions, and consent management update. The Accelerator makes

extensive use of the TM Forum SID model (which provides standard definitions for all information that flows through the CSP and between CSP and their business partners).

SAP also works with partners to enhance its customer experience offering for the CSP market. Some of these partners build applications that run on the SAP C/4HANA platform and are made available to customers to purchase and use to enhance their SAP deployments. These partners include ISVs such as DigitalRoute, Mirakl, and DocuSign, as well as IT service players such as IBM Global Services, Accenture, Deloitte and Tata Consultancy Services (TCS).

SWOT Assessment

Strengths

- **SAP C/4HANA provides a single, integrated customer engagement solution.** This offering can be deployed as a hosted offering on the SAP Cloud Platform and therefore benefit from the platform's services including its library of pre-defined, end-to-end processes, harmonized UX templates to support the integration of products included in the offering, open APIs, and intelligence and analytics. The Commerce and Marketing Cloud products can be deployed in a private, public or hybrid cloud environment.
- **Acquisitions over the years have strengthened the SAP C/4HANA offering for CSPs.** Acquired assets such as: Hybris (e-commerce), Gigya (customer identity and access management [CIAM]/enterprise consent and preference management [ECPM]), and CallidusCloud (dealer and partner commissioning capabilities) provide the omnichannel and advanced capabilities required to deliver trusted, personalized engagements to customers.
- **Possesses cross-industry expertise.** SAP works across more than 25 industries with a focus on improving customer experience in these industries. Learnings from deployments across these industries can be cross-pollinated into the telco industry practice to boost its offerings for the industry. This cross-industry expertise is also particularly critical as telcos look to expand into other industries
- **SAP has a broad partner ecosystem.** SAP has a broad partner ecosystem that supports the delivery and development of its Customer Experience solution for CSPs. SAP develops solutions with partners (either as integrated solutions with SAP products or as applications built on the SAP C/4HANA platform). These solutions are made available on the SAP Marketplace (SOLEX) for customers to purchase, download, and use to enhance their engagement solution. Partners such as Mirakl, IBM Global Services (strategic development partner for the Commerce Suite for telcos), DocuSign, and Checkpoint are examples of partners that have built solutions as applications which run on the SAP C/4HANA platform. Partners such as DigitalRoute have developed integrated solutions with SAP's products. These solutions automate the gathering of OSS and BSS-related data to improve customer experience. For example, SAP HANA can receive network fault-related data via DigitalRoute's MediationZone platform and utilize its geographical analysis capabilities to detect and communicate with customers affected by an outage in a location. With this insight, the CSP can take actions to improve the experience of affected customers by providing offers to remediate the issues, for example.
- **Security and data compliance capabilities are very strong.** SAP provides customer consent and preference management capabilities which are included in its SAP Customer Data Cloud offering. These capabilities are critical to ensuring CSPs deliver trust-based engagement with

CSP customers. They provide support for the jurisdictions of different regions including Europe, the US, and more. CSPs operating in multiple geographical regions can take advantage of these capabilities to ensure that regulations are met.

Weakness

- **Lacking in the view of the OSS space.** While, SAP's partnership with DigitalRoute fills the gap that other BSS focused vendors may have, SAP is limited to the network data sets that DigitalRoute can collect or can access. SAP will need to partner with more telco mediation platform providers to assure customers that their solution can feed data from a broad set of IT systems.
- **Deployment capabilities are limited.** Based on the parameters assessed for deployment capabilities, SAP recorded low scores. The vendor's solution supports only deployments involving in-memory databases. In addition, a limited toolset is made available to customers to migrate from pre-existing solution to its solution. Consequently, CSP customers are likely to face delays in the deployment of SAP's solution or face increased cost to deploy its solution.

Opportunities

- **Recent acquisitions will enhance SAP's CE solution.** The largest acquisition made by SAP to date, Qualtrics (acquired in January 2019), has the potential to uplift CSPs' CX insights. These CX insights (which include feedback provided by customers regarding experiences they receive) can direct the orchestration of engagements across a customer's journey. recast.ai (acquired in January 2018) is another SAP acquisition, which provides conversational AI capabilities that can further enhance CSPs' chatbot capabilities (deployable across multiple customer channels). Coresystems, which was acquired in 2018, is positioned to enhance SAP's field service management capabilities via its AI-based field service scheduling capabilities. It is built to match qualified internal and external technicians to incoming service requests, based on skills, location, and availability.
- **Take advantage of the growing demand for machine learning capabilities.** The vendor's recent developments with machine learning can enable CSPs to become efficient and save on customer engagement costs. For example, its Service Ticket Intelligence offering categorizes trouble tickets. It leverages NLP to categorize these tickets and machine learning to detect the likely factor(s) leading to the incident. It then identifies a team to address it. CSPs can invest in this solution to enable reduction in the time and costs adopt associated with resolving trouble tickets. SAP Service Ticket Intelligence will therefore be attractive to CSPs
- **SAP's Commerce solution for telecoms is widely used by CSPs.** The vendor records over 50 CSP customers using its SAP Commerce Cloud offering including BT/EE, DNA, Telecom Austria and AI Austria. This customer base provides the vendor with a potential market to sell its full customer engagement offering to.

Threats

- **Integration of acquired assets could impact how quickly SAP rolls out new, capabilities into the market.** While these assets (for example, Qualtrics, recast.ai and Coresystems) come with solution enhancing functionalities, integrating these capabilities is known to take time. For example, some of these assets were developed to run with different database structure

and not SAP's HANA proprietary database. Therefore, time will be required to harmonize these new capabilities within SAP's portfolio.

Appendix

Table 1: Use cases for customer engagement solutions used in telecoms

Use cases	Description
Customer acquisition for targeted marketing	<p>Customer engagement solutions provide CSPs with the capability to track subscriber actions on third party platforms or channels, including social media and utilize anonymized insights on customers' behavior to target offers. Promotion on offers can then be targeted at prospects on these platforms and redirected to the CSPs' website. Tailored experiences and communications can be created using the same profile information used on the third-party platform. As interactions progress, the customer's profile is enriched and used to further personalize engagement.</p> <p>With the centralized orchestration of customer journeys provided by customer engagement solutions, marketers can track and identify the right times and channels on which to target offers at customers. Insights on customers' consumption patterns can be used to recommend the right offers to target. The result is increased conversion rates and additional value derived from transacting with the customer.</p>
Upsell and cross-sell	<p>Sales teams can seize every renewal and other buying opportunities to upsell or cross-sell CSP offers. The customer engagement solution can utilize insights on customers' usage and buying behavior to determine when to make and present an upsell/cross sell offer. These offers could align with current services provided by the CSP or its partners; resulting in increased ARPU and extending the longevity of customer relationships.</p>
Customer loyalty campaigns	<p>Customer loyalty programs such as points-based and reward-based programs can be delivered using customer engagement solutions. For example, with the points-based loyalty program, customers accumulate loyalty points based on their purchase history. Insights drawn from first-party data such as customer purchase, billing and top-up data and third-party data can then be used to identify the most relevant rewards to target at the customer. Some operators that have invested in customer engagement solution have seen increased retention rates and increased customer sentiment brand scores.</p>
Proactive customer service	<p>As customers' demand for more self-service capabilities increases, CSPs need to extend their customer support capabilities to their mobile apps. Using the centralized monitoring capabilities of customer engagement solutions, moments of poor experiences can be identified and communication on remedial actions being taken by the CSP sent to self-service apps. By implementing this use cases, the CSP demonstrates its proactive capabilities, enhances the use of its mobile (self-care) app, and reduces number of calls to the call center; thereby reducing costs.</p>

Crafting and re-defining customer experiences	By constantly tracking the customer journeys, the orchestration capability within customer engagement solutions can detect new customer engagement patterns and utilize this view to enhance existing customer journeys or create new ones. Customers' responses to these new engagement models can be measured to determine their effectiveness at improving customer experience.
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Source: Omdia

Further reading

Improving Customer Engagement to Personalize The Customer Experience in Telecoms, SPT001-000069 (June 2019)

The Critical role of Customer Engagement Platform for Growth, INT001-000113 (December 2018)

Ovum Decision Matrix: Selecting a Customer Engagement Platform, INT001-000088 (August 2018)

"Customer engagement platforms are essential for successful digital transformation," INT001-000095 (August 2018)

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